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OLD AGE AS A FACTOR IN SURGERY.

BY N. F. GRAHAM, M.D.,

PROFESSOR OF SURGERY IN THE MEDICAL DEPARTMENT OF HOWARD UNIVERSITY, WASHINGTON, D. C.

MANY surgeons have always clung to the opinion that in old age there is little power to recover from surgical diseases, and when we consider the changes which have taken place in the tissues and organs of persons advanced in life, it is not to be wondered at that such an idea should prevail. The laity have always believed, and still believe, that old age is a grave barrier to recovery from either injury or disease.

Certain atrophic and degenerative changes take place in old age which affect glands, muscles, and other soft parts. Cells become smaller without change of structure. The spleen and lymphatic glands become greatly diminished in size, and the same is true of the villi and glands in the digestive tract. At a still later period of life senile changes commence in which there are fatty degeneration and calcareous deposits. The fatty changes affect muscles, nerves, vessels and glands; the calcareous deposits are found in muscles, ligaments, cartilages, heart, and bloodvessels. The result of these atrophic and degenerative changes is impairment of all the functions of the body. The cellular elements, though diminished in size, still retain their physiological characteristics, and so, when the tissues become inflamed, the same changes take place in the cells and bloodvessels as in younger subjects.

The cellular structures of the old will return as certainly, though not as speedily, to the embryonic state when a part is in a state of inflammation, as in the young or middle-aged. This affords the best explanation of the facility, and very often the certainty, with which wounds and injuries are repaired in old persons.

The readiness with which fractures and grave injuries in the aged are repaired is every day becoming more and more manifest, so much so that our preconceived ideas are changing, and age can no longer be adduced as a strong reason against the hopeful and careful treatment of wounds, ulcers, fractures, and other surgical diseases, with fair chances for good results.

Recovery from serious illnesses as well as from injuries in old people is very interesting. It

seems strange, when the other nutritive forces are failing, or already gone, that those connected with repair should remain in so good a condition. The explanation must be found in the fact that the cellular elements retain their normal physiological condition (except as to size) as long as the individual lives; although, for successful results, the blood and bloodvessels need to be in, at least, fair condition.

Certain conditions of the body exist in these cases which give them some advantages over the young. They possess a lower and slower excitability. They are not so liable to hæmorrhages—primary or secondary—or to acute inflammatory troubles. Their nervous systems have undergone changes which make sensation more obtuse, and, therefore, they are not as subject to acute nervous affections, such as tetanus and painful spasm of the muscles, as are younger subjects.

On the other hand, there is a strong tendency to diseases of the heart and vessels, so that shock is not so well borne, and as a consequence there is feeble or slow reaction. This fact has, very naturally, prejudiced surgeons against undertaking operations in old persons; but if, on examination, the vital organs—the heart and nerves—are found sound, with a firm, regular pulse, there need be no hesitation in operating, as, under such circumstances, the chances for success are good.

After the age of seventy years the number of persons who require operations is not very large, but to those who do a refusal is often given by the surgeon and their friends on the plea of age. Provided that the patient is in fair general health, with a hereditary tendency to long life, mere age is not a good reason for withholding treatment either with the view to prolonging life, or for the relief of acute suffering.

The following cases, some of which came under my own observation and treatment, and others of which were selected from various sources, show wonderful recuperative powers in very old men and women:

CASE I.—J. S., a negro, aged ninety-two years, came under my care in the Freedmen's Hospital in the winter of 1882, suffering from gangrene of the left foot and leg, the result of senile changes in the arteries. The "line" was irregular, extending around the limb and forming a triangle, the apex reaching within four inches of the lower edge of the patella, the base occupying the lower part of the

belly of the calf. The granulations were abundant and healthy in the large groove which separated the dead from the living tissues.

On January 5th, I amputated the leg three inches below the knee by the double-flap operation. The only bleeding was free oozing from the capillaries, and there were no vessels which required ligatures. The flaps were brought snugly together, stitched, and the stump dressed with iodoform-gauze. Healing took place, mainly, by first intention, and the man was able to be about on crutches at the end of six weeks.

CASE II.—S. L., a white male, aged eighty-seven years, with an axe-wound of the face, cutting directly through the centre of the bridge of the nose, and with a downward inclination deep into the maxilla, and opening into the mouth through the right side, making a cut five inches in length. The divided portion of the nose, with the other soft parts, fell over the mouth and chin. When I reached the patient he was unconscious from shock and loss of blood, with two small arteries—one on each side of the nose—spurting. I ligatured the vessels, cleaned the wound, and adjusted the detached part of the nose and face, placing the first stitch in the centre of the bridge, and five others on each side; applied narrow adhesive-plaster strips between the stitches, and covered the whole with a moist cloth—the only dressing at hand. The wound healed readily, and the man was able to be out of bed in four days, and out of the house in ten.

CASE III.—Mr. H. L., a large, strongly-built man, eighty-eight years of age, noticed in December, 1887, a small pulsating tumor in the left popliteal space, which rapidly increased until it reached the size of a small orange, when it suddenly became very painful. He also suffered from intense pain in the toes, foot, ankle, and leg of the same side. At this juncture—early in March, 1888—he consulted a good surgeon, who advised him to wear an elastic bandage or snug knee-cap, which he did without much benefit.

I saw him about the middle of March, when there was no abatement of the pain, which prevented sleep. The foot as far as the instep was white, and there were discolored patches on all the toes. The first stage of gangrene was clearly marked. His great age was discouraging, considering the complicated nature of the case. I flexed the leg on the thigh at an angle of forty-five degrees, wrapped the foot and ankle in a liberal amount of cotton-wool, and kept the patient well under the influence of morphine. This, with friction of the leg and foot twice daily, for an hour at a time, with good food and stimulants, was the only treatment. In about five weeks the aneurism ceased to pulsate, the gangrene remained limited to a small portion of the great and second toes, and in two months he was able to go about on crutches, which he has now discarded, though he is still lame. The aneurism is completely cured, and the loss of substance from gangrene is scarcely noticeable.

CASE IV.—In December, 1884, Mrs. S., aged ninety-one years, came under my care with a fracture of the bones of the forearm near the wrist, the

result of a fall. I adjusted the fracture and applied two well-padded, straight splints. Good union took place in six weeks, with the result that the arm was as useful as before the fracture.

The same patient had had a fracture through the neck of the left femur, at the age of eighty-one years, from which she recovered in ten weeks with firm union and a useful limb, though with one and one-half inches shortening. The only treatment for the fractured femur was the application of sand-bags, without extension.

CASE V.—In November, 1886, I treated Miss B., aged seventy-six years, for fracture of the lower end of the right radius, by adjusting the fracture and placing a pistol-shaped splint on the limb. At the end of six weeks union was good, and in eight weeks she could use the hand as well as ever. Five years previously to the date of the fracture, I assisted in removing her right breast for cancer, from which she made rapid recovery, though in 1886 the disease again developed in the scar and axillary glands, and has since proved fatal.

CASE VI.—Mr. F., a robust man, seventy-five years old, came under my care in August, 1890, with a large carbuncle on the back of the neck, extending from just below the occipital prominence to the fifth cervical vertebra and on both sides to the ears. The size of the open slough was three by four inches. Under ordinary treatment, with the addition of injecting into the mass, twice daily, from two drachms to half an ounce of peroxide of hydrogen, which was first done by Dr. Balloch during my absence from the city, and continued by me after my return, the patient made an excellent recovery, and was out in six weeks.

CASE VII.—In November, 1885, I operated on J. G., aged seventy-four years, for epithelioma of the lower lip, and removed a wedge shaped piece, the base of which extended from the angle of the mouth to the centre of the lip and the apex to near the symphysis. I brought the edges together with three pins and a stitch through the upper part of the lip. Union took place by first intention. There is no deformity and no signs of a return of the disease.

CASE VIII.—R. S., aged eighty years, came under my care in July, 1888, for epithelioma of the lower lip, which had destroyed two-thirds of the margin of the lip, and had extended as an irregular ulcer to the chin. I removed a V-shaped piece, including the diseased portion, brought the cut edges together with pins, and enlarged the mouth by an incision an inch in length on the sound side, stitching the mucous membrane to the skin. Union took place by first intention, leaving but a small notch at the angle of the lips, in spite of the fact that he was a hard drinker. The man is still robust and has no evidences of a return of the disease.

The *Dublin Medical Press*, August, 1864, reports the case of May C., aged one hundred and one years, whose right hand was amputated for cancer on April 10, 1864. Healing was mainly by first intention, and repair was complete in one month.

In the same issue of that journal is reported the

case of Miss A., aged eighty-four years, suffering from scirrhus of the left breast. The entire gland was removed, and recovery took place with no bad symptoms.

The *Bristol Medical Journal*, March, 1886, reports the case of a man, aged eighty-nine years, who recovered with good use of the knee, after a severe fracture of the patella; and in the same journal is reported a similar accident, with equally good results, in a man aged seventy-two years.

The *British Medical Journal*, June, 1883, reports a case of operation for strangulated femoral hernia in a woman aged eighty-eight years. Recovery was rapid, though she was so feeble that her relatives protested against the operation, and, as they said, wished the old lady to die in peace. There is also reported in this journal a case of fracture of the right femur at the age of eighty years, with good recovery; and a man, aged ninety-two years, with fracture of the bones of the forearm, good union taking place in the ordinary time, with fair use of the hand; also the case of Miss S., who died at the age of one hundred and four years. She broke the neck of her femur at the age of one hundred and one years, and, though union failed to take place, she lived three years afterward, and went about comfortably on crutches.

A Hindoo, aged ninety-six years, whose case is reported in the *Medical Times and Gazette*, 1867, p. 607, suffered from a fracture of the left tibia and fibula above the ankle, the foot being bruised and excoriated. The fracture occurred on September 11th, when it was dressed in ordinary side splints. On September 29th he could bear his weight on the leg, and on October 11th he walked out of the hospital perfectly well.

Gowers, in *The Lancet*, 1887, vol. ii. p. 85, reports two cases of epithelioma. One was in a man aged seventy-eight years, the left cheek being covered by a sore seven inches in circumference, the removal of which was followed by recovery. The other was in a woman aged eighty-two years, requiring amputation of the finger for the disease. Union by the first intention took place.

In the same journal Dr. Hutchinson reports the case of a man ninety years old, who suffered from gangrene of the hand and forearm. The line of demarcation formed and the gangrenous mass separated. Amputation of forearm; stump healed well.

Dr. Ferguson reports in the same number of *The Lancet* a case of melanotic sarcoma, in a man aged seventy-five years. The mass was situated at the apex of Scarpa's triangle, and was removed with difficulty, exposing in the operation the femoral vessels. Erysipelas supervened, but the patient made a good recovery.

In *The Medical Journal and Review*, 1849, is reported the case of a negro known to be one hundred and two years of age, and believed to be older, who made a good recovery after amputation of the right leg. Dr. Thomas Annandale, in the same journal, reports twelve cases of an average age of seventy-two years, on whom he operated at various times. Five of the operations were for cancer, one was resection of the elbow; two were

amputations of the arm; two for large fatty tumors; and one in a man aged seventy-eight years, for strangulated hernia. He also operated for stone in the bladder on a man seventy-four years old. In all of these cases there was recovery followed with good results.

As a general rule, old people tolerate pain better than do the young. Owing to the changes which have taken place in their nervous systems their sensibilities are obtuse, and, therefore, they complain less, while owing to the same condition of the nervous system, combined with other senile changes in the heart and other organs, shock is more severe and not so quickly rallied from. They endure operations for pathological conditions, such as the removal of tumors, cancers, etc., remarkably well, because they have in some degree acquired a tolerance to the gradual change and tissue-metamorphosis which render operations necessary.

Their recovery from wounds is not so rapid, for the reason that the cells and intermediate substances are more rigid, and the softening process which changes the tissues when in a state of inflammation to a condition suitable for repair is slower. In the old, tissue-genesis predominates over suppuration. The growth of morbid tissue goes on at a more moderate pace; cell-division is not so rapid or general as in the young, and, as a consequence, there is less waste from pathological conditions. We can also see how the processes of repair can take place more readily when there is but little excitability of the tissues, a condition often found in the aged, and which may also partly explain their recuperative powers. It is, however, but reasonable to conclude that they are much less able to stand the shock of injuries and operations than are persons in the prime of life, owing to the senile changes which have affected every organ of the body, and, particularly, the heart, bloodvessels, and nervous system. Hence in shock lies the greatest danger to the aged, and if the patient rallies the prognosis, so far as repair is concerned, may be considered good.

REMOVAL OF RENAL CALCULI FROM THE MUSCLES OF THE LEFT LUMBAR REGION.

BY MARIE B. WERNER, M.D.,
OF PHILADELPHIA.

Miss G., aged thirty-two years, gives the following history: As long as she can remember she has suffered from recurring pains in her left side radiating down toward the groin.

She had scarlatina at the age of seven years, followed by so-called remittent fever. Some swelling of both the hands and feet was noticed at that time, and the urine was high-colored and deposited a brick-dust sediment; no chemical or microscopical examination was made.

At the age of ten years she had a slight attack of measles, followed by good recovery.

During the winter of 1876-77 she had an attack of so-called intermittent fever associated with pains in the back and oedema of feet, hands, and face. The urine was heavily loaded with a brownish-red sediment; no chemical or microscopical examination was made. Recovered in March, 1877.

In 1882 the patient suffered from pain in her abdomen and back, radiating to the groin and thigh. This was pronounced rheumatism. She again became dropsical, and her urine was thick, dark, and of a peculiar odor. Patient remembers a discharge of "blood and matter" from the urethra. There were also high temperature and rigors. After two months' continued pain a lump formed in the left lumbar region.

Home remedies failing, her physician was again summoned, who pronounced the swelling a scrofulous abscess. This was twice lanced. The openings partly closed, but four sinuses remained, through which the contents forced their way.

An attack of pneumonia in the spring of 1889 necessitated long-continued rest in bed, thus interfering with proper drainage. During this time two of the four sinuses closed, and a new one formed just above the crest of the ilium.

When the patient was first seen by Dr. Calista V. Luther and myself, September 19, 1889, she was emaciated and weak, had an anxious expression, and every movement was an unconscious study to immobilize the affected side. Inspection showed two cicatrices and two open sinuses occupying a space of about three inches square, one inch to the median line of the first three lumbar vertebrae, and a third sinus above the crest of the left ilium.

A probe, passed for two inches into one sinus in the back toward the crest of the ilium, met a hard, roughened substance, suggesting necrosed bone. The sinus opening near the crest of the ilium admitted the probe a distance of six inches upward and somewhat backward, and no resistance was felt. A stream of water injected through the longest sinus escaped from the shorter ones in the back.

Dr. Luther examined the urine and found no albumin or pus.

We decided that an exploratory incision was the only proper course of treatment.

On October 26th, the patient being chloroformed, assisted by Drs. Joseph Price, Kynett, and Luther, I made an incision through the two sinuses in the back, and found two calculi, the larger an exact cast of the pelvis of the kidney and with a prolongation which evidently had extended into the ureter. The base of this calculus was marked by roughened prominences, possibly due to extension into the renal tubules. The other calculus was the size of a coffee-bean. (See Figure.)

The long sinus was then opened and thoroughly scraped, making a large, T-shaped wound. There was but a thin wall between the cavity containing the stone and the kidney, which was felt through the relaxed abdominal walls.

An exploring needle was plunged into the kidney in three directions to ascertain if there were other

calculi, but with negative results. The wound, thoroughly disinfected with bichloride solution, was



then packed with bichloride gauze, over which was placed a bandage, and the patient was put to bed. Thirty-six hours later the lips of the wound were approximated with adhesive plaster.

The long incision, about eight inches in length, healed very kindly; the shorter one, however, refused to close, as it was near the cicatricial tissue left by the two closed sinuses. All stimulation proved of no avail.

December 12. Dr. Luther and I concluded to remove as much as possible of the fibrous tissue and draw the flaps together with sutures. This was done, and some strands of chromicized gut were laid in the bottom of the wound, a dry compress bandage of bichloride gauze held in place by broad adhesive strips was applied and left undisturbed for five days. On removing the strips there were considerable odor and moisture, probably owing to the catgut, which seemed to have acted more as an irritant than a drain. Deep union seemed good, and the surface appeared healthy. Dressed with a ten-per-cent. solution of sulphurous acid.

24th. Only a small space in the triangle was unhealed. This has remained a small fistulous track, and from it the patient believes she detects at times an escape of gas.

Her general condition improved markedly, and the opening is only annoying by its presence.

The calculi were seen by Professor Leffmann, who, after examining the smaller one chemically and microscopically, reports the following:

"The fragment of calculus which you sent consists principally of calcium phosphate mixed with some carbonate. The proportion of organic matter is small and no uric acid can be detected. Under the microscope it is seen to consist of irregular layers."

It is a common occurrence to have nephritis follow an attack of scarlatina. The symptoms of chill and fever, pain in the loins, etc., are common to fevers; but the history of the oedema and the condition of the urine lead me to suspect acute nephritis instead of intermittent and remittent fever in the two attacks mentioned.

The history of the attack during 1882, however, is clearly that of pyelitis. There was general pain in the back and abdomen, while suppuration was announced by rigors and high temperature.

The most notable feature of this case is, that nature, in endeavoring to cast off the offending body, succeeded in entirely expelling it from the kidney, and seemingly repaired the damage done to that organ.

It is one year since the operation, and the patient is in good health. The fistula remains, and she insists that there is an occasional escape of gas; indeed, she states that after an injection of glycerin and iodoform into the fistula, "the yellow powder" was seen in a discharge from the bowels soon after. Is it possible that during the suppurative stage of her disease some calculi found their way into the colon and thus formed a direct communication between the fistula and that organ?

In searching through medical literature the first mention of cases resembling the one just reported is made in the *Lafitte Mémoires de l'Académie Royale de Chirurgie*, 1753, vol. ii. p. 233. Three cases coming under the author's observation are reported:

CASE I. occurred in 1734. A fistulous track, resulting from a lumbar abscess, was enlarged by Lafitte and two stones were extracted. The patient was cured.

CASE II.—Abscess occurred in 1727, and a stone was extracted in 1738. Recovery.

CASE III.—An abscess formed in 1741, and the stone was spontaneously expelled through the fistulous opening six years later.

In conclusion, Lafitte adds a case reported by Gaspard Bauhin, of a girl who had a tumor in the lumbar region following total suppression of urine. After poulticing for two months the surgeon distinguished a hard point in the tumor. This he incised, and from it extracted two stones. The patient was cured.

The foregoing cases may have more interest from a historical than from a practical point of view, since the records are somewhat vague; but they certainly show the recognition of such a condition at that time.

In 1797 Hermann Schützer crants¹ published the case of a patient aged fifty-six years, in whom a stone formed in the right kidney and was extracted through an abscess in the back. During the year 1777 she complained for months of continued pain in her back and loins. This was followed by high temperature, vomiting, and the formation of a soft, œdematous swelling in the right hypochondrium. In the course of twelve or more days distinct fluctuation necessitated an incision, which was followed by a free discharge of pus. Pain and fever abated, and at the end of a fortnight the discharge became thin and watery, with a distinctly urinous odor. A probe introduced into the abscess came in contact with a hard, roughened substance. The opening

was enlarged and the stone extracted by forceps. The discharge of urine gradually diminished and at the end of a fortnight entirely ceased.

Thomas Annandale² reports the case of a patient aged forty-two years in whom, in 1868, a lumbar abscess formed, was lanced, and discharged healthy pus. Three months later a small, triangular-shaped calculus escaped, and still later some gritty particles were removed from the margin. No urine passed through the fistula. It became necessary to re-open the wound at a later period, when portions of soft calculous matter were extracted. The wound remaining open after several months, Mr. Annandale was consulted, and, on passing a probe for three inches, encountered a hard body. Enlarging the sinus, he extracted a stone weighing 72 grains. Rapid recovery resulted.

This is the latest case recorded which, strictly speaking, belongs to a class of lumbar abscesses resulting from calculi expelled from the kidney through the back, in which the kidney apparently suffered little or no destructive injury. This may be explained by the fact that the correct diagnosis and the treatment of lumbar abscess by an exploratory incision, and, if called for, by nephrotomy or nephrectomy, render cases of neglected abscess exceedingly rare.

1010 CLINTON STREET.

THE INDICATIONS FOR SOME OF THE APPLICATIONS COMMONLY USED IN THE TREATMENT OF CHRONIC GRANULAR LIDS.³

BY G. E. DE SCHWEINITZ, M.D.,

OPHTHALMIC SURGEON TO THE PHILADELPHIA AND CHILDREN'S HOSPITALS; OPHTHALMOLOGIST TO THE ORTHOPEDIC HOSPITAL AND INFIRMARY FOR NERVOUS DISEASES.

THE success of the medical treatment of a case of chronic granular conjunctivitis depends upon the application of some remedial agent to produce absorption of the "granulations" which are the essential characteristic of the disorder; and, moreover, to bring about this absorption without destruction of the mucous membrane and the production of changes more unfortunate than the original disease.

In the sections on the treatment of trachoma in text-books occasionally one meets with a sentence reading, "for routine treatment nothing is so effectual" as such and such a caustic application. Precisely on account of this "routine treatment" many patients wander from clinic to clinic only partially relieved. The extreme slowness with which the granulations absorb, and the tedious nature of well-established granular disease of the conjunctiva

¹ Edinburgh Medical Journal, 1869, xv. pp. 21-29.

² Portion of the paper on the "Medical and Surgical Treatment of the Granular Lids," read to the D. Hayes Agnew Surgical Society of the undergraduates of the Medical Department of the University of Pennsylvania, December 19, 1890.

³ Medical Facts and Observations, vol. vii. p. 285.

are the reasons why ophthalmologists have sought to relegate the treatment of this affection to surgical procedures, and there is no doubt that numbers of cases are managed more successfully by methods distinctly surgical than by astringent and caustic applications. However this cannot always be accomplished, nor is it always wise, and the best method of using the so-called ordinary remedies must be learned.

For the present we will omit reference to operative interference and to the treatment of acute granulations, chronic blennorrhœa (sometimes, but improperly, classed with granular disease), and that form of granulations found in the conjunctiva which by some authors has been called *follicular conjunctivitis*, and classified as a disease separate from true trachoma, and by others looked upon as a mild form of trachoma from which the most severe types may develop. As is well known, the nature of the granulations found in this disease has not been definitely settled, and great difference of opinion as to their origin exist, although the latest researches seem to show that they arise from the natural lymphatic follicles of the part, and that it is the follicles through their changes which originate all the anatomical and clinical qualities of trachoma.

Professor Raehlmann, of Dorpat, who holds views in regard to the origin and nature of trachoma somewhat at variance with those of many other authors, has recently given a description of the life-history of the "granulations" which furnishes a convenient basis for my remarks on their treatment. According to this author, the severe forms of trachoma may arise from the mild varieties which have just been referred to as follicular conjunctivitis, or may develop independently, and are characterized by a follicular eruption, in masses, situated not alone on the surface of the conjunctiva, but also in the depth of the tissue which is infiltrated, and whose circulation is checked, causing partial or extensive disturbance of its surroundings. At first the mucous membrane, of a pale-red or yellowish-gray color, is unevenly rough, slightly or not at all folded, and contains the follicles. These increasing form closely-packed masses side by side and above one another, in such a manner as to compress the true conjunctival tissue and choke its circulation. The mucosa becomes greater and greater in volume, the contents of the follicles soften and ulcers are formed. The infiltration of the neighboring tissue assists in the egress of the contents of the follicles, and brings about a prolapse of the bottom of the ulcer and the formation of warty protuberances. During this ulcerative stage there may be photophobia, lachrymation, and profuse secretion, together with fresh pannus or exacerbations of previously-existing pannus. This pannus consists in the development of

closely-packed vessels in the superficial layers of the cornea, sometimes attended by the development of ulcers and formerly believed to be dependent upon a mechanical process; that is, upon the scraping of the roughened lids across the cornea, but described by the author we are now quoting not as a traumatic irritation, but as an independent corneal complication, or follicular formation with lymphoid infiltration, analogous to the conjunctival disease. As the process continues while the surface of the conjunctiva remains rough, distinct prominences are wanting, and the final stage begins to appear, namely, cicatrization. The cicatricial tissue forms from the old follicles, new ones in the meantime arising, act upon the tarsus previously softened by a lymphoid infiltration, and produce the common deformities of the lid and its margin, namely, entropion, distichiasis, and trichiasis.

In addition to the facts thus quoted in regard to the pathological anatomy of this disease it is important to remember that it is directly contagious, especially during the stage of ulceration and free secretion; that it increases the susceptibility of the conjunctiva to take on acute inflammatory reaction; that it may become an endemic disease in crowded institutions; that certain races, especially the Irish, Jews, and Eastern races, are peculiarly liable, while the negro is almost exempt; that it is more common in low-lying regions, and it is said not to occur at an altitude above 1000 feet; and, finally, that there is much evidence to show its dependence upon a specific microorganism, which, however, has not been positively isolated.¹

Of the numerous applications used in the treatment of this disease the following have met with deserved favor: Strong solutions of bichloride of mercury, sulphate of copper, either in the form of a crystal, or as *lapis divinus*, which consists of alum, nitrate of potassium, and sulphate of copper fused together, and camphor equal to one-fiftieth of the whole added, and the preparation run into a mould to form a stick; nitrate of silver in solutions of varying strength according to the exigencies of each case, or as the mitigated stick, and boro-glyceride.

Taking a case in which there is conspicuous lymphoid infiltration of the conjunctiva, but without mucopurulent discharge, and unassociated with much hypertrophy of the papillary layer of the conjunctiva, the lid should be everted, and all portions of the mucous membrane upon which the follicular eruption can be detected carefully touched with a small mop of absorbent cotton previously dipped in

¹ Burnett (THE MEDICAL NEWS, November 22, 1890), quoting Prof. G. C. Kober, states that trachoma has been seen at an altitude of 4700 feet, particularly among Indians.

a solution of bichloride of mercury, 1 to 500. The conjunctiva lining the lids passes to the ball through a somewhat loose reflection of the membrane forming in the upper and lower lids the fornix, or retro-tarsal fold. Now sometimes, when the upper lids are everted, this will come into view, but sometimes it will not, and many mistakes are made simply by turning the lids without an endeavor to bring this fold, which is particularly liable to infiltration with the granulations, into prominence. This usually can be accomplished by making the patient roll the eye strongly downward. If this is not sufficient it is better to evert the lid over a spatula and push the fold into view. This little detail deserves attention, as failure to accomplish it successfully means failure to apply the local remedy on the spot where it is most needed. I have many times watched attendants in hospitals making applications which never reached more than the anterior portion of the everted lids, totally failing to come into contact with the transmission fold tucked back and under the crease of the turned lid. If instead of the conspicuous lymphoid infiltration just stated the granulations are more dense, more elevated, and rougher, the strength of the bichloride solution may be increased 1 to 300. At first every other day, and afterward three times a week, is sufficient for this application, and at the same time the eyes should be thoroughly irrigated four times a day or oftener with a tepid solution of the same drug of a strength of 1 to 7000. It requires some judgment to know how often to repeat the stronger application, a safe rule for this and for all instances being the amount of reaction produced, and it is wise never to repeat a severe topical medication while the irritation of a previous application is still pronounced. This treatment, which a few years ago was especially advocated by Staderini, Arnauts, and others, in a great many instances is the most satisfactory of the local applications. It may be used whether pannus is present or not, and I do not believe it is contra-indicated even when ulceration of the cornea complicates the pannus. It is easily seen that the physiological action of the application is twofold. First a powerful germicide is employed in a disease that is believed by many to be of bacterial origin; in the second place a caustic is used, but not of such a character that it destroys tissue to the detriment of the surroundings.

If, during the course of the treatment on inspection of the lids with a *loup*, a precaution it would be wise to exercise before each application, the condition which I described before, quoting from Professor Raehlmann, of ulceration of the softened follicles with extrusion of their contents is observed; or, if the case is in the stage of softening, with swelling of the papillary layer, increased

pannus and mucopurulent or purulent discharge, nitrate of silver becomes the more suitable remedy. In most instances a sufficient strength is 10 grains to the ounce of water, applied with an absorbent-cotton mop. Occasionally, the strength may be increased to 15 grains, and under certain circumstances the mitigated stick may be employed. In all cases where strong solutions are used these must be neutralized with common salt, or the excess washed away with plain water. In making the application a distinct white film should form over all portions touched, and the treatment should never be repeated until the tissue thus destroyed and represented by the white film has been shed with the formation of new epithelium. Nitrate of silver, in the first place, is a powerful germicide, and, in the second place, is superficially strong but does not penetrate deeply, because the film of coagulation which it forms prevents its entrance into the subjacent tissues. When the stage of ulceration has been checked by this means, as may be found by ocular inspection and judged by the disappearance of the discharge, the bichloride of mercury treatment or one of the other caustics may be resumed. During the treatment by the application of the silver, made at such intervals as the amount of reaction teaches is wise, scrupulous cleanliness with antiseptic lotions, preferably, I think, bichloride of mercury, but, in the belief of some, saturated solutions of boric acid, should be continued. A remedy with which I have had some success, and which I do not see mentioned in the text-books, namely, hyposulphite of sodium put up with glycerin and water may be tried. At one time I used it quite extensively in the Philadelphia Hospital, and while I could not see any effect in the absorption of the granulations, it seemed to relieve the patients of the intolerable irritation of which they so constantly complained.

When by treatment a case has reached that condition in which the surface of the conjunctiva remains rough, but distinct prominences are wanting, and yellowish and white lines begin to intersect each other between the granular surface; or, in other words, when the early evidences of cicatrization are beginning, sulphate of copper or *lapis divinus* is the best application. It is rather painful but must be faithfully applied exactly in the same manner described with the other remedies, always douching the lids with cold water after its use. In the presence of discharge it does not appear to act as efficaciously as at other times, but in all other stages it is useful, in the belief of many, the most useful local medication. It should be remembered now that we have to deal with a caustic not severe enough to destroy healthy structures, but efficient against granular tissue, whether we believe this to be analogous to the granulation of wounds or

not. It is, moreover, a stimulant and an alterant to the mucous membrane at a time when such actions are most necessary.

During the final stage, as the granulations are gradually disappearing, and the cicatrization becoming more complete with a tendency to dryness, it seems to me that boroglyceride has a twofold action, namely, the absorption of those granulations which still remain and lessening the tendency to the production of a xerotic condition. It may be used in a strength as great as fifty per cent., but twenty per cent. usually will suffice. Many authors look with great favor upon this drug in phases of granular disease other than the one I have just described. During all of these stages of the malady, and no matter what astringent or caustic is employed, scrupulous cleanliness should be maintained by the frequent use of one of the "eye-washes" to which attention has been directed.

Much of the preservation of useful vision depends upon the successful treatment of pannus. If this is mild in character, consisting only of a few vessels in the cornea and slight roughening of the epithelium, it will disappear with the subsidence of the granulations. If it is severe in type and associated with corneal ulceration, treatment specially directed to its cure is required. The question, how much violent pannus contra-indicates the local astringent or caustic which is being applied to the granulations must be decided by observing whether the pannus is aggravated or not by the topical medication. As before stated, it has not seemed to me that bichloride of mercury acts unfavorably, but nitrate of silver and sulphate of copper require watching. During active pannus it is well to reduce the strength of the bichloride of mercury collyrium to 1 to 10,000, or substitute for it boric acid solution. Ulceration of the cornea in the presence of any change in the color of the iris, or of actual iritis, calls for atropine drops, and much relief will be afforded by hot stupes. In the absence of iritic complications eserine is the better drug, and exercises its curative action upon the solution in the continuity of the corneal tissue, and at the same time helps in dissipating the new-formed vascular structure. If the eserine, in a strength of $\frac{1}{8}$ to $\frac{1}{12}$ of a grain to the ounce, causes headache or local irritation, this may be modified by using at night a drop of atropine solution.¹ In other words, the rules for the use of eserine in this complication do not differ from those applicable to corneal ulceration uncomplicated by the presence of granular lids.

I have described old methods and commonly-used drugs, with the exception, perhaps, of the hyposul-

phite of sodium, the value of which is doubtful, and firmly believe that better results can be obtained with them, medically speaking, than with a host of new remedies that have not stood the test of long experience, provided the three points upon which success depends are observed, namely, complete exposure of the affected area and thorough application of the remedy; selection of the topical medication according to the stage of the disease which is present, and avoidance of unintelligent "routine treatment"; and scrupulous cleanliness by the aid of antiseptic solutions in the intervals between the use of the local caustic and astringent measures.

AN EXPERIMENTAL AND CLINICAL STUDY OF ERGOT.¹

BY JOHN C. HEMMETER, PH.D., M.D.,
OF BALTIMORE, MD.

(Concluded from page 139)

The effect of ergot on blood-pressure. It is under this subject of inquiry that we meet with the most contradictory statements of those who have studied the question. Thus, we are informed by H. C. Wood,² H. Kohler,³ and Eberty⁴ that ergot causes an enormous increase in blood-pressure—when no special mention is made I refer, of course, to *arterial* pressure—basing their conclusion on kymographic observations. On the other hand, Boreischa,⁵ Herrman,⁶ Wernich,⁷ and Handelin⁸ hold that the blood-pressure is really lowered.

These discrepancies partly find an explanation in the varieties and general differences in the qualities of the ergot that was employed. We have already alluded to the manner in which pharmaceutical products of ergot vary, not only in degree, but also very decidedly in the character of their actions. Kohler³ compared the action of the ergotin of Wiggers with that of Bonjean, and found wide differences in the character and kind of action between them. Another explanation of the differences of opinion of the authors referred to is that it can be seen from the reports of at least two of those who have stated that ergot causes a reduction in arterial pressure that doses of the drug were used which were too large to produce physiological effects—the doses were toxic and the effects also.

¹ In the first half of this paper (THE MEDICAL NEWS, January 31st, p. 136), the dose of ergotole given at 3.25 should be 0.25 c.c., not 25 c.c., while the doses given at 3.57, 4.30, and 4.38, on page 137, should be 0.5 c.c., not 5 c.c.

² Phila. Med. Times, vol. iv. ³ Virch. Archiv, B. ix. p. 384.

⁴ Hallenser Diss., 1873, and Schmidt's Jahrb., B. clviii. p. 127.

⁵ Arbeiten a. d. Pharmak. Laborat., Moskau, i. 55.

⁶ Büchner's Repertor. f. Pharm., 1871.

⁷ Virch. Arch., B. lvi. p. 505, and Beiträge z. Geburtsh., Bd. iii., Berlin, 1874.

⁸ Schmidt's Jahrb., B. clv. p. 143; also, Dorpat Diss., 1871.

⁹ Loc. cit.

¹ Excellent advice in regard to the use of eserine in this connection will be found in Dr. W. F. Mittendorf's brochure on "Granular Lids and Contagious Diseases of the Eye."

Brown-Séguard¹ maintained that the effects of ergot are of two kinds: First, physiological; causing, also, motor spasms and rise of arterial pressure. Second, pathological or toxic, causing vasomotor paralysis and reduction of arterial pressure.

Handelin² admits that the fall of pressure was noted after toxic doses.

Dr. Charles L. Holmes³ found that when ergot was injected into the jugular vein blood-pressure was first lowered and then considerably raised. He attempted to explain this by supposing that the ergot passing to the right side of the heart excites constriction of the bloodvessels of the lungs by locally acting on their muscular walls, and thus by lessening the supply to the aortic (systemic) circulation causes a fall of blood-pressure. But when it reaches the medulla the ergot stimulates the vasomotor centre, producing constriction of the vessels throughout the body, and, consequently, rise of blood-pressure. This view is supported by the fact that, if ergot is injected into the femoral artery, instead of a fall occurring at first, there is a rise incident to a constriction of the vessels in the limb, then a fall as soon as the ergot reaches the lungs, and, at last, a final rise due to systemic contraction of the vessels of centric origin. H. C. Wood⁴ has successfully disproved this view in a very instructive paper (see, also, Wood's *Therapeutics*). He found that when ergotin is injected into a vein of a mammal it causes an immediate fall of arterial pressure which is shortly followed by an enormous rise. This is in agreement with Holmes's main statement. On dividing the cord, however (*i. e.*, causing vasomotor paralysis), Wood discovered that ergot no longer produces a rise of arterial pressure. He concludes that the rise of pressure produced by ergot with the spinal cord intact is centric in origin, due to vasomotor spasm. This overthrows the theory of Holmes regarding the local independent constriction of pulmonary arteries by ergot.

Wood explains the primary fall of pressure by the sudden introduction of a large quantity of ergot into the heart causing momentary paralysis, which passes off as the drug is removed by the circulation. This fall in pressure does not occur when the drug is gradually introduced into the circulation by hypodermic injection; and Wood⁵ and Eberty⁶ have shown that ergot is a direct cardiac poison.

Before we proceed to state our experiments on this point we may be permitted very briefly to present some older observations concerning the effect of ergot on the number of the heart-beats. It is established beyond a doubt that ergot in physiological doses diminishes the frequency of the pulse, and we

quote, on the authority of Professor Stillé, that this fact has been independently noted by Parode, Gibbon, Arnal, Hardy, and Beatty, and also by Professors Bailly and See.¹

These observations have been made on man, the amount of reduction varying from ten to thirty-five beats per minute. According to Landois,² the arterial pressure has been estimated in man to be greatly increased after ergotin injections, the method employed being that of v. Basch. In a neurasthenic patient at present under the writer's observation a fall in the number of pulse-beats from 92 to 48 occurred after taking 2 drachms of fluid extract of ergot for a congestive hemicrania. The pulse was 92 at 10.30 A.M.; at 11 A.M. a teaspoonful of a mixture containing one-half drachm of fluid extract of secale was taken, and repeated every two hours. At 6 P.M. the hemicrania was relieved and the pulse numbered 48 per minute. On the morning of the following day it was 80 per minute, no ergot having been taken during the night. Eberty,³ also, found that ergot produces slowing of the heart-beats in mammals.

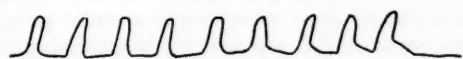
We have performed two experiments in the biological laboratory of the Johns Hopkins University

TRACING 1.



Tracing from isolated frog's heart beating under pure serum.

TRACING 2.



Tracing from isolated frog's heart thirty seconds after solution of ergot in serum entered the heart.

TRACING 3.



Tracing from isolated frog's heart three minutes after replacing pure serum by ergotized serum. Taken in same length of time as 1 and 2.

on a frog's heart completely isolated and suspended in a normal salt solution. The ergot was supplied to the sinus venosus from a eudiometer. The pulsations were considerably affected in number and character. We employed the Ludwig and Coats method of isolating the frog's heart; a canula was in the inferior vena cava and one in the aorta; a delicate pen and a fine manometer recording on a

¹ Arch. de Physiol. 1870, iii. p. 434.

² Loc. cit.

³ Arch. de Physiol., t. iii. p. 384, 1870.

⁴ Loc. cit.

⁵ Loc. cit.

⁶ Loc. cit.

¹ Bulletin Thérap., t. lxxviii. p. 435.

² Physiologie, p. 171.

³ Loc. cit.

revolving cylinder, completed the apparatus. On the preceding page will be found tracings taken from the rotating drum, showing the changes in the number and character of the contractions of the isolated frog-heart which occurred within five minutes after the normal circulating medium (pure blood-serum) was replaced by a two-per-cent. solution of ergotole deprived of its alcohol.

Similar, but exaggerated, tracings were obtained when stronger solutions were used. The heart recovered when the ergotized serum was replaced by pure serum. When the heart of the frog is still in connection with the cord and brain the reduction in pulse-beats is more marked: now a two-per-cent. solution of ergotized serum will, in a period varying from three to five minutes, cause the cessation of the heart-pulsations—the heart stops in diastole. In one case, after the heart had ceased beating for thirty seconds (by watch and drum-tracings), it resumed its work after the pneumogastriacs were divided and the cord severed by a pair of scissors. When a normal isolated frog's heart is fed by pure serum the sinus venosus, the atrium, the ventricle, and the truncus arteriosus contract in the order in which they have just been named and in rapid succession. When the heart is fed on ergotized serum this succession is slower. But when the heart is still in connection with the nerve-centres the succession is still slower, until only an occasional sluggish, wavy contraction passes over the dilated ventricle very much like a peristalsis. We are justified to draw from these changes in the isolated heart the conclusion that ergot causes a reduction in the number and force of the contractions of the isolated heart of the frog. Ergot, therefore, to a certain extent, acts locally, and is a poison to the muscular fibres of the heart. When the heart is still in connection with the brain and cord, however, the rate of the heart-rhythm and the force of contraction are changed to a greater degree than in the isolated heart. In a frog's heart with its nervous connections intact the rate of the rhythm, the force of contraction, the tonicity, and conduction are more altered than in the isolated organ under the same strength of ergotized serum. It is, therefore, probable that, although ergot acts to some extent locally and directly as a poison to the heart-muscle, its main influence is exerted upon the central nervous system. It was our intention to study the action of ergot on the mammalian heart, isolated according to Professor H. Newell Martin's method, in a manner similar to the one by which the alcohols had been experimented with.¹ But this method of in-

vestigation requires much and elaborate apparatus, necessitating greater preparations and more time than was at our disposal. We hope, however, to investigate in the future this particular action of ergot in the manner referred to. We can reach a fair conclusion regarding this action on the isolated mammalian heart by observing the effects of ergot after the cord has been destroyed from the cervical region downward, and the vagi cut.

In dogs and cats whose left or right carotid was connected with a manometer recording on the kymograph, and who received injections of ergotole or fluid extract of secale cornutum into the jugular vein (1 c.c. ergotole in 50 c.c. defibrinated blood), there occurred within from ten to twenty seconds a fall of arterial pressure, followed in from thirty to thirty-five seconds by a rise. In four dogs the fall of pressure was equal to 12.5 mm. of mercury. In the same animals the rise of arterial pressure following immediately upon the fall was equal to 32.5 mm. of mercury. Both of these estimates are averages. The rise is, of course, calculated from the line of normal pressure before the ergotole injection. These dogs were very nearly the same size and weight. In four cats the average rise in arterial pressure was equal to 28.2 mm. of mercury. The normal average arterial pressure in the carotids of the four dogs in question was equal to 15.4 mm. of mercury.

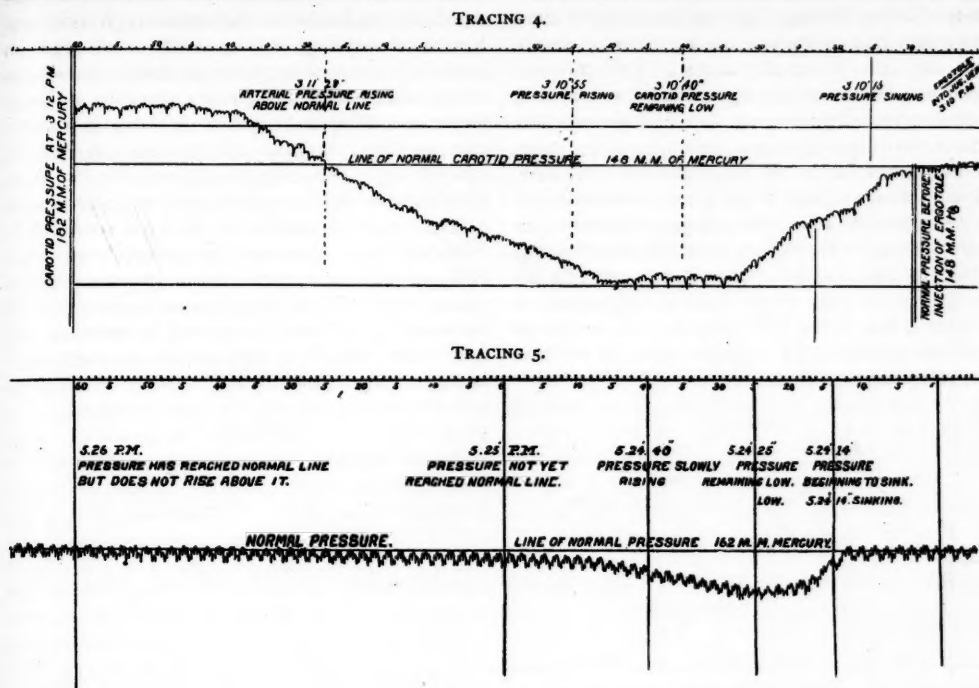
After destruction of the spinal cord from the cervical region downward and section of the vagi in dogs and cats, there is still a reduction of blood-pressure immediately following the injection of ergotole into the jugular vein; but this is not followed by a rise of pressure, although the pressure reaches the normal line after some time. This is in accordance with the results of H. C. Wood and others, who have demonstrated that the rise of arterial pressure under ergot is due to a centric effect of the drug, and that separation of the heart from the central nervous system prevents this rise of pressure.

The tracings on the opposite page show the action of ergot just described.

Tracing No. 4 is that of the pulsations of the heart of a dog with spinal cord and vagi intact. The primary reduction and subsequent rise of arterial pressure above the normal line are evident. Tracing No. 6 is that of a dog whose spinal cord has been destroyed and vagi cut, and in which the rate of respiration, shown before destroying these parts, was afterward kept up artificially. Attention is here directed to a reduction of blood-pressure under ergot, which is followed by a slow rise to the normal, but does not exceed it.

We have assumed with H. C. Wood that this reduction of pressure is caused by the direct action of ergot upon the heart-muscle. It is possible that

¹ On the Comparative Physiological Effects of Certain Members of the Ethylic Alcohol Series ($\text{CH}_3\text{O}-\text{C}_5\text{H}_{11}\text{O}$) on the Isolated Mammalian Heart: Studies from the Biol. Lab., Johns Hopkins Univ., vol. iv. 5, by J. C. Hemmeter, M.D., etc.



it is due to an action of the poison on the motor and trophic ganglionic nerve-cells of the heart, which have been so accurately studied by Gaskell.¹

At present we are unable to devise a method to decide upon which of these tissues of the heart the action of ergot in primarily lowering pressure is due. In animals under curare and under the influence of chloroform or ether, the slowing of the pulse-rate is not evident and apparently does not occur. This fact we are unable to explain.

To study the slowing of the pulse-rate the isolated heart of the frog or an unnarcotized and unanæsthetized mammal should be used. In two cats in which the ergotole was slowly and gradually injected hypodermically, the blood-pressure (carotid) rose after four minutes, and there was no primary depression.

Whenever injections are made into the jugular vein, the drug should be diluted with serum or defibrinated blood, strained through sterilized linen, and warmed to the temperature of the animal. Concentrated and cold injections depress the heart's action independently of any drug contained in them.

The deductions then from this part of our investigations are—

1. Ergot reduces the number of pulse-beats per minute.

¹ Journ. Physiol., vol. iii.; also W. H. Gaskell, Muscarine and Cardiac Electric Changes, Journ. Physiol., vol. viii.; and T. Wesley Mills, Journ. Physiol., vol. vi.

2. In the isolated frog's heart it reduces the force of the contractions.

3. It exerts a local poisonous influence on the heart of the batrachian as well as on that of the mammal when injected into the jugular vein.

4. Its main action, however, is exercised through the influence of the central nervous system.

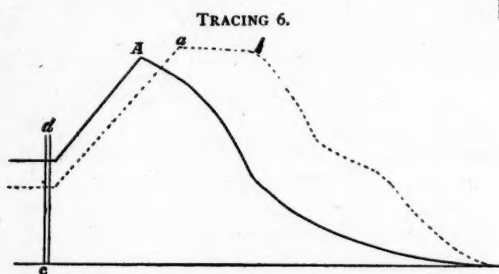
5. It raises arterial pressure when injected into the jugular vein of mammals. The rise is preceded by a primary depression due to the local action on the heart.

6. It is impossible at present to decide whether this local action is due to an influence on the heart-muscle or on the cardiac ganglia.

Although it is a matter of some difficulty, from the mere fact that the blood-pressure rises after the administration of a drug, to say whether the effect is due to the action of the drug on the heart or on the arterioles, yet we can come to some general conclusion regarding its mode of action by comparing the alterations which it has produced in the blood-pressure with those which occur in the pulse-rate. (Brunton.)

In the normal condition of an animal, when all the nerves are intact, a rise in the blood-pressure renders the pulse slow by increasing the normal tone of the vagus centre in the medulla, and a fall of blood-pressure quickens the pulse by diminishing the tone. In the normal animal this mechanism tends to keep the blood-pressure more or less con-

stant. Lauder Brunton has supplied us with some very instructive curves and tracings bearing on this phenomenon. When alterations in pulse-rate and blood-pressure are depicted graphically, so that a rise in one curve indicates a rise in blood-pressure and a rise in the other indicates a quickening of the pulse, the two curves run in *opposite* directions if the alteration in blood-pressure is due to the arterioles, but they run parallel when the alteration is due to the heart. Thus, if the vagi be cut we find that the pulse-rate rises, and in consequence of this the blood-pressure rises also. Here the alteration in pressure is due to the heart, and the two curves are therefore parallel. In atropine-poisoning we have an analogous phenomenon.



After the injection of atropine, shown by the vertical line, the vagus is paralyzed, the pulse becomes very rapid, and the blood-pressure rises also. At *A* the vasomotor centre becomes paralyzed, the arterioles dilate, and the pressure falls. From *A* to *B* the action of the heart remains uniform notwithstanding the fall in blood-pressure, but at *B* the heart begins to become paralyzed, the pulse-rate and blood-pressure continue to fall steadily till death.

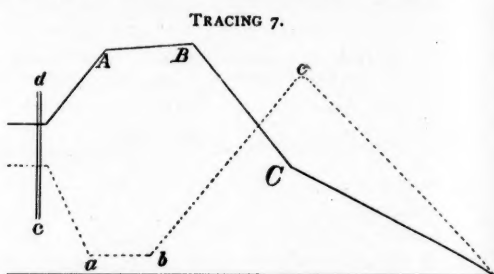
If the vagi be irritated the pulse-rate falls, and in consequence of this the blood-pressure also falls. Here again the alteration is due to the heart, and the two curves are parallel.

If, on the other hand, the arterioles are made to contract, the pressure rises, but the increased pressure stimulates the vagus roots in the medulla, and the pulse-rate falls so that the curves run in opposite directions. This phenomenon is shown in our tracings of the heart-beat and pressure under ergot. It must be borne in mind that the effect of the toxic dose of ergot is exactly the reverse of the physiological action, the latter being mainly a rise of arterial pressure, slow pulse, and general vasomotor spasm, whilst the toxic effects are fall of arterial pressure, rapid pulse, and vasomotor paralysis. These effects are graphically recorded in tracing No. 7.

From these evidences alone, therefore, we have a right to assume that the physiological rise of arterial pressure under ergot is due to its action on the arterioles, not on the heart.

Influence of ergot on body-temperature. It is

especially emphasized in the reports of Wright¹ and Kersch² concerning the toxic effects of ergot on animals, that a low body-temperature and coldness of the surface were especially noticeable. Tessier, Gross, and Bonjean³ confirm that this is also the case in birds, chickens, turkeys, and pigeons. A case of ergot-poisoning is reported by Dr. G. S. Oldright,⁴ in which, among other symptoms, great coldness was complained of. In a case recorded by Neubert,⁵ great coldness of body-surface was especially noted after ergotin-poisoning. In a case reported in the *Toledo Medical and Surgical Journal*, the symptom of coldness was very prominent. We have made records of temperature observations on birds (chickens, pigeons, and sparrows) and mam-



In this diagram of pulse- and pressure-curves under ergot the alterations are due at first to the action of the drug on the arterioles. The unbroken line indicates blood-pressure, the dotted line indicates the pulse, the vertical double line, *d*, indicates the time of the injection of ergot. This is followed by contractions of the arterioles and consequent rise of blood-pressure, which stimulates the vagus roots and causes slowness of the pulse. At *a* the pulse is slowest, and continues so until *b*; so far as we have physiological effect. Now at *b* the vagus becomes paralyzed (beginning toxic effect), the pulse grows quicker and the pressure rises still higher between *A* and *B*. At *B* the vasomotor centre becomes paralyzed, the arterioles dilate, pressure falls, although the pulse is rapid at *c*, the heart itself begins to be paralyzed (general toxic effect), its beats become slow and pulse and pressure fall steadily until death. (Schema borrowed from Lauder Brunton.)

mals (rabbits, cats, dogs, and guinea-pigs). In sparrows the hypodermic injection of 0.2 c.c. of ergotole causes a reduction of temperature, which is lowest in forty minutes, when it begins to return to the normal. In sparrows the reduction was observed from 43° C. to 39.5° C. within thirty minutes after the injection. In pigeons a reduction from 40° to 34° in half an hour was observed after injecting 0.5 c.c. of ergotole. The temperature was taken in the cloaca. In rabbits a fall of temperature from 39° to 34.5° C. was observed one hour after injecting 0.5 c.c. of ergotole. The thermometer in case of the mammals was inserted into the rectum. In four dogs a T-shaped canula was inserted into the

¹ Loc. cit.

² *Traité de l'ergot de Seigle*, Paris, 1885.

³ *Canada Med. Journ.*, 1870, p. 404.

⁴ *Journ. für Pharmacodynamik*, Bd. 11, p. 433, 1860.

⁵ Loc. cit.

carotid artery, a small thermometer was pushed into the vertical arm of the canula, and held in place by a piece of rubber tubing stripped over it, the thermometer was thus dipping into the blood current. A fall of temperature from 39.5° to 34° was recorded forty minutes after the injection of 1 c.c. of ergotole. In one dog the temperature fell to 30° C. after injecting 2.5 c.c. of ergotole. In the mammals the ergotole was injected into the jugular vein. I know of no thermometric records of human beings who had taken ergot. In the case which was reported in the preceding part of this paper in connection with the depression of the number of heart-beats under ergot, the temperature was 96° F. in the evening after taking $1\frac{1}{2}$ drachms of fluid extract of ergot, the normal temperature of the patient at that time being 98° F. (mouth-temperature). I shall in the clinical portion of this work exhibit the temperature charts of patients suffering from meningitis and others with pneumonia, in which a reduction of 1.5° F. followed the hypodermic injection of ergotole (S. and D.), and rose again in one hour and fifteen minutes after the injection. After the injection was repeated it again sank 2° F. This fall of temperature occurs when the animals experimented on are not under an anæsthetic, and when curare was not used. In these cases the ergot was injected into the rectum and the sphincter ani clamped. It occurred also in animals in which the number of respirations was kept above the normal by artificial respiration. This seems to indicate that the lowering of temperature is not due to a narcotic or anæsthetic which may have been used nor to reduction of the number of respirations. The cause of the low temperature under ergot we have not been able definitely to explain. We are dealing here with a sudden, acute fall of temperature, with which the temperature of the surrounding medium has no connection.

As causes of the fall of temperature under ergot, we might suggest the following factors, viz.:

(A) Disturbances in the regulatory mechanisms which control the loss of heat from the body. Under this head one meets with three chief changes that might have a causative influence, viz.:

1. Dilatation of the cutaneous bloodvessels.
2. Reduction of the number of respiratory movements.
3. Reduction of the number of heart-beats and consequent loss of tone in the general circulation.

(B) Disturbances in the general metabolic processes.

(C) Impairment of the nutritive and oxygenating functions of the blood.

(D) Irritation of the cortical heat-centre of Landois and Eulenburg (thermic centre).

Returning to the mechanisms for reducing body-

heat, which are mentioned under the first heading, we may consider first, "Dilatation of the cutaneous bloodvessels." It has been assumed, on good grounds, that there is a vasodilator centre in the medulla. This centre must undoubtedly have a potent control over heat-regulation, and would cause increased expenditure of heat by dilating the cutaneous vessels all over the body. As a matter of fact, however, ergot causes a constriction of the cutaneous bloodvessels, and from evidences given in the preceding part of this paper this explanation of the fall of temperature is invalid.

(2) That the low temperature is not caused by a reduction in the number of respirations we know from the fact that the loss of heat occurs in animals in which artificial respirations are kept above the normal number. The temperature of such animals was taken by pushing a thermometer into a T-shaped canula in the carotid.

(3) The third factor under heading 1 comprises reduction of number of systolic contractions and the circulatory changes depending thereon, as causes of the reduction of body-temperature. We know that every cardiac contraction in itself causes heat; it sets the blood in movement and this motion is, for the most part, turned into heat within the body by friction within the bloodvessels. We know that under ergot the cardiac contractions are reduced in number, force, and tonicity, and, therefore, we are justified in concluding that this is at least one causative factor in reducing the temperature. The question might arise whether the reduced action of the heart is a cause or a result of the fall of temperature. As the number of heart-beats are, as a rule, reduced long before the temperature (in most cases of hypodermic injection of ergot within two minutes, the temperature remaining normal for from ten to fifteen minutes more) we may conclude that the slowing of the heart, inasmuch as it precedes the fall of temperature, is a cause, not a result of the loss of heat.

(B) Disturbances in metabolism lower the body-temperature. It is more than probable that a drug that affects the general force of the circulation, as ergot does, must necessarily impair the general metabolism. This is also a constant observation in the (trophic) nutritive disturbances of ergotism. The quantity of urea in the urine of animals taking ergot might serve as a key to the degree of metabolism of the body. We hope to be able to publish in the near future a number of experiments on this subject, in which a quantitative reduction of urea in the urine of dogs is demonstrated, the animals having for two days been kept on the same quantity of meat food as in the two days preceding the analysis. We employed the sodium hypobromite method (Knop, Hufner), improved by Dr. J. R. Duggan,¹

¹ American Chemical Journal.

for quantitative estimation of urea. Ergot, therefore, seems to act like quinine in reducing temperature, and, at the same time, the amount of urea in the urine. There is, however, some doubt as to whether the reduction of the quantity of urea is really an infallible proof of reduced metabolism. We shall consider the reduction in the total amount of liquid urine, which is said by some authors to occur under ergot, in the clinical part of this report to be subsequently published. On the whole, therefore, and judging from its effects on the heart and on the circulation, and from the phenomena of ergotism, we are disposed to believe that ergot diminishes general metabolism, and that this may be a cause of the fall of temperature under its influence.

(C) Impairment of the nutritive and oxygenating functions of the histological elements of the blood may be reducing the oxidation processes lower body-temperature. Our efforts to detect any changes in the structure of the red and colorless corpuscles in ergotized animals have been negative. Nevertheless, it is possible that such histological changes do occur in the blood elements. They have been shown to occur under alcohol by Herrman,¹ by Jaillet and Hayem,² and by C. H. Schulz.³ By closer and careful spectroscopic, microscopic, and micro-chemical study such changes may later on be shown to occur as an effect of ergot.

(D) Landois and Eulenburg have discovered a cortical heat (thermic) centre in the gray matter of the cerebrum of the dog, near the centres for the flexors and rotators of the anterior extremity, situated near the lateral end of the sulcus cruciatus. Local electric stimulation of this centre causes a reduction in the temperature in the extremities of the opposite side of the body. Extirpation of this region causes great rise of temperature in the extremities of the opposite side of the body (confirmed by Hitzig, Bechterew, Wood, and others). It is probable that ergot acts by stimulating this centre. This is a matter which cannot be experimentally established, as section or destruction of the cord, which would be necessary to confine this effect on the brain cortex, causes vasomotor paralysis, dilatation of the vessels, and fall of temperature in itself (Landois).

Under the head of reduced action of the heart under ergot we should have referred to the experiments of Landois and Ammon, who caused an enormous slowing of the heart-beat in rabbits by stimulating the peripheral end of the vagus for one and a half hours. The velocity of the blood-current was also much reduced. At the same time the temperature in the rectum sank from 39° to 34.5° C. Landois thinks that this weakened circulation and

reduced heart-action are analogous to a reduction of oxidation processes, so that the causes which we have stated under headings (B) and (C) are etiologically very closely connected.

When discussing uterine peristalsis we omitted to mention that we made efforts to get graphic records of the uterine contractions by means of a manometer; this method has been successfully used by Schatz in Germany. Thus far our results in this particular have been negative. The cervical canal of rabbits and dogs being too small to allow the introduction of the smallest manometer we could make, this method will be tried with larger animals, and perhaps included in the clinical part of this paper. It would appear to be especially applicable for obtaining graphic records from larger mammalia, perhaps even from the human uterus.

ON THE RELATION OF ECZEMA TO DISTURBANCES OF THE NERVOUS SYSTEM.¹

BY L. DUNCAN BULKLEY, A.M., M.D.,
ATTENDING PHYSICIAN TO THE NEW YORK SKIN AND CANCER HOSPITAL.

(Concluded from page 133.)

2. NERVOUS AND MENTAL SHOCK.

THE effect of nervous shock and violent emotions, such as grief, anger, etc., in the production of eczema has long been recognized by writers on dermatology, and the well-authenticated instances of this on record are so numerous that it cannot be questioned that this form of nervous disturbance often operates either to produce the disease or to excite an attack in one susceptible to the same. The limits of this article do not permit even a reference to the many statements supporting this proposition by observers of the highest standing, or to the many cases which have been reported. Meyer² has collected a large amount of material bearing on this subject, and gives a number of illustrative cases. Leloir³ has also studied the matter very closely, and relates several very striking cases: a single one of these will serve to illustrate this portion of our subject.

A young woman who had never had any eruption previously except a pustular disease of the scalp at two years of age, but who was very nervous and impressionable, and who was in perfect health, suffered a violent mental shock, as follows: Approaching her home she saw her little child leaning out of the window, and on the point of falling; she cried out, and the child being startled, let go her hold and fell, strangely enough, directly into her arms,

¹ Prepared by special request, to open a discussion on eczema at the Tenth International Medical Congress, Berlin, 1890.

² Meyer: *De l'Influence des Emotions morales, etc.*, Paris, 1876.

³ Leloir: *Des Dermatoses par Choc moral. Ann. de Derm. et de Syph.*, 1887, p. 373.

¹ Arch. f. Anat. u. Physiol., 1886, p. 27.

² Virchow and Hirsch, *Jahrbucher*, 1884, p. 369.

³ Hufeland's *Journ. f. prakt. Heilkunde*, 1841.

so that it received no harm. But the mother lost consciousness, and was completely broken down by the shock, and within three days developed a sharp attack of eczema, beginning on the upper extremities and invading much of the surface. Some months afterward she had a second and a third attack, each time following mental disturbance.

The same writer records several similar cases. Tommasoli¹ reports the occurrence of eczema after long grief and sudden shock.

Mental and moral shock occurring in many different manners have been observed to be followed quickly by attacks of eczema; thus Radouan² reports that cases occurred in immediate consequence of the siege and Commune of Paris, in 1871, and I myself saw more than one case ascribable to the financial panic in Wall Street, known as "Black Friday," several years ago.

3. REFLEX PHENOMENA: (a) OF INTERNAL ORIGIN; (b) PERIPHERAL.

That reflex irritation is capable of exciting disease in other organs than the skin has long been an established fact, and reflex neuroses are among the most interesting phenomena seen in medical and surgical practice. This causation of eczema has also long been recognized, and clinical illustration in abundance could be cited, were it necessary or did time and space permit.

This reflex stimulation may come from within, or it may result from external irritation of the skin; in either case the eruption excited may cease with the removal of the cause, or may persist indefinitely.

a. Reflex Eczema of Internal Origin.

The simplest, and perhaps the most frequent, instance of the reflex excitation of eczema from an internal cause is that observed in teething infants, in which each accession of a tooth will cause a fresh outbreak of eruption on the cheeks, forehead, chin, or elsewhere. Intestinal irritation by indigestible food may likewise induce attacks of eczema in the same manner as in some subjects it gives rise to urticaria, and Scarenzio³ narrates two cases in which the eruption of eczema was due to the presence of tapeworm and one in which it depended on the oxyuris.

Danlos⁴ has made a very careful study of the relation between the menstrual function and diseases of the skin, and reports a number of cases of eczema in which there was a most remarkable connection between the appearance of the eruption and the

occurrence of the menstrual flow; in some instances the accessions of eczema were observed a considerable number of times, and I myself have frequently remarked the same in a number of patients. Danlos also quotes Raciborsky as mentioning having observed this connection, and Tilt¹ speaks of the same. Hebra² states that he has seen women in whom each pregnancy was accompanied by an eruption of eczema on the hands. Bangs³ reports pruritus and eczema of the anal region dependent upon a reflex irritation from urethral stricture.

Richey⁴ has recorded a most interesting case in which an erythematous and vesicular eczema appeared on the cheeks of a little girl of ten years each time that she used her eyes to any extent. She suffered from ametropia, and when this was relieved by proper lenses the eruptions ceased to appear, in spite of great use of the eyes. I have recently had under my care a most striking case in a lady aged about fifty years, in whom attempts to use the eyes had repeatedly precipitated a severe attack of eczema beginning on the eyelids; this occurred many times before I saw her, and happened a number of times under my own observation. I have seen several other striking instances more or less similar, and oculists have mentioned to me that the same was not very uncommon in their experience. Juler⁵ has treated of the reflex origin of eczema in connection with eye troubles.

b. Reflex Eczema of Peripheral Origin.

Although it undoubtedly happens that external irritants may and do produce an eruption of eczema in a reflex manner, the clinical evidence of this has not been as fully reported as that with reference to other portions of our subject. The instance reported by Kroll⁶ is, however, very striking:

A woman, thirty-nine years of age, received a severe scald of the right cheek, followed by cicatrization. Under treatment by collodion a severe eczema developed on the cheek, followed by vesicles on the fingers, hand, and arm of the same side. Shortly after eczema appeared on the left cheek, and then on the left hand and arm.

It was thought that the eruption developed on the extremity through a reflex irritation from the auricularis magnus, by means of the communication of the cervical with the brachial plexus. This is further confirmed by Tidenat,⁷ who describes persis-

¹ Tilt: The Change of Life, p. 175.

² F. von Hebra: Loc cit, p. 457.

³ Bangs: Neuroses of the Genito-urinary System, N. Y. Med. Monthly, 1885.

⁴ Richey: Archives of Ophthalmology, xiii. 1, 1884.

⁵ Juler: Lancet, 1884.

⁶ Kroll: Cited in Viertelj. für Derm. und Syph., xv. p. 612.

⁷ Tidenat: Des gelures. Thèse d'agrégation. Paris, 1880.

¹ Tommasoli: Monatsh. für Prac. Dermat., 1886, p. 432.

² Radouan: Étude théor. et prat. sur l'Eczema; Thèse de Paris, 1875, p. 41.

³ Scarenzio: Quoted in Viertelj. für Derm. und Syph., xvii. p. 315.

⁴ Danlos: Étude sur la Menstruation, etc. Paris, 1874.

tent eczema as a not infrequent complication of old burns.

The development of patches of eczema upon distant portions of the body is readily explained in many instances by a reflex irritation from some local patch, which may have been excited by a local cause. The later symmetrical development of acute vesicular eczema on a corresponding opposite portion of the body, as one hand or foot after the other, can be satisfactorily explained by reflex action through the cord. It is well known that in scabies there is often much eruption in parts and localities where the insect has not been present; these eruptions are often explained as due solely to scratching; but, with the reflex pruritus which has led to the scratching, there is also some capillary disturbance; and relief from the itching is not obtained until the surface is torn and more or less exudate has reached the surface. In a recent paper upon pruritus the present writer¹ endeavored to show from personal observations the reflex nature of much of the itching on the surface, and if the phenomena of itching are carefully studied, on the normal or diseased skin, it will be readily seen how almost invariably a local irritation of one part will be attended with or followed by a greater or less degree of sensation in some part near by or quite distant.

4. NEUROSES: (a) STRUCTURAL; (b) FUNCTIONAL.

Closely connected with the preceding is the group of cases in which eczema has been observed to accompany, follow, or be dependent upon disease or disturbance of nerve-trunks. These may be divided into two classes, first, according as there is actual disease or damage to the nerve, and second, where no nerve lesion is known, but only functional disturbance manifested.

a. Eczema from Structural Neurosis.

The first, and perhaps clearest, evidence of this is that furnished in connection with wounds and injuries of nerve-trunks, as studied especially by Mitchell, Moorhouse, and Keen, during the late civil war in America. Mitchell² speaks of eczema as of frequent occurrence in those suffering from nerve injury, principally from gunshot wounds; Duménil³ is quoted by Leloir as reporting eczema dependent upon alterations of peripheral nerves, which he describes; the same writer quotes Duplay⁴ as reporting eczema secondary to traumatic neuritis

in stumps after amputation. Finally, Arnozan¹ relates the case of a man sixty years old, who had never had eczema, in whom the eruption followed soon after a violent contusion of the shoulder; there were violent pains along the arm, and forty hours after the accident eczema developed along the track of the radial nerve.

b. Eczema from Functional Neurosis.

Neuralgia, like neurasthenia, is a rather indefinite term, representing an affection or condition which may be said to have little or no established pathology, but a very large clinical history; and any very definite connection, causative or otherwise, with eczema, would be difficult to demonstrate with any great certainty. But everyone who carefully studies large numbers of cases of eczema in private practice will readily find many instances among a certain class of cases with eczema, where it would seem probable that the eruption and the neurotic condition called neuralgia were in some way connected. Cavafy² relates a case in which a severe trigeminal neuralgia of the left side suddenly ceased, and nine days later that side of the face became red and swollen, and developed a vesicular eczema. Leloir³ quotes Eulenburg to the same effect, and narrates two cases, communicated by Lailler, in one of which the eczema alternated with the migraine. I, myself, have seen many patients with eczema in whom neuralgia was undoubtedly a factor of some importance in the case, although the etiological relations between the two are difficult to determine. The following striking case was observed during some months:

Mrs. B., a widow, aged thirty years, was thrown on her own resources for the support of herself and mother. She took to literary pursuits, and became editor of a magazine requiring a large amount of personal work, she using the pen almost constantly. After some months she began to suffer from neuralgia of the right arm, and at the same time a papular eczema developed on the back of the arm and the radial side of the forearm, attended with most intense itching. When she ceased for a time from her great use of the hand the neuralgic pain lessened and the eruption diminished, but a return to her severe application would cause a return of both. This continued for some time, and treatment for either condition seemed to have very little effect while the arduous labors were persisted in, but yielded quite readily when work was relaxed or suspended.

Other more or less similar cases could also be related.

¹ Bulkley: "Clinical Notes on Pruritus," Journ. of Cutan. and Ven. Dis., 1889.

² S. Weir Mitchell: Injuries of the Nerves. Phila., p. 171.

³ Duménil: Gaz. Hebdom., 1866, p. 88. (Leloir, loc. cit., p. 156.)

⁴ Duplay: "Erupt. Eczem. sur les, etc." Union Méd., 1879. Leloir, loc. cit., p. 156.

¹ Arnozan: Des Lésions troph. consec, etc. Paris, 1880, p. 124.

² Cavafy: Brit. Med. Journ., 1880, July 24 (Ann. de Dermat., 1881, p. 150).

³ Leloir, loc. cit., p. 157.

5. ENCEPHALOPATHY AND MYELOPATHY.

Ecze¹ma induced by disease of the brain and spinal cord must be very rare, if, indeed, it really ever occurs, as relatively few allusions to the subject can be found in literature. Meyer¹ quotes Fèvre to the effect that ecze¹ma is frequent among the insane, and the latter considers the skin alteration a trophic disorder, dependent upon modifications in the cerebro-spinal axis. He has observed that when the mental condition is obstinate the eruption also is rebellious, but that when the latter is readily cured there is reason for a more favorable prognosis for the mental derangement. Nicol² has also noted ecze¹ma as common among the insane. No record has been found of ecze¹ma connected with inflammatory or neoplastic disease of the brain.

A number of observers have reported ecze¹ma in connection with diseases of the spinal cord, but the evidence of this relationship is not very strong. Charcot³ speaks of papular or lichenoid eruptions which he has often observed along the track of painful nerves in ataxia, and which he referred to a common cause with the nerve lesion, and Rendu⁴ quotes Charcot as describing vesicular lesions in connection with acute and chronic myelitis. Vulpian⁵ describes a papular eruption, attended with intolerable itching, which appeared at the end of attacks of fulgurating pains in a woman with ataxia, and Purdon⁶ reports three cases of ataxia, in which the patient suffered from ecze¹ma of the lower extremities during the later period of the disease. Finally, Weir Mitchell⁷ and Couyba⁸ record ecze¹ma after wounds of the medulla.

It will be seen, however, that the positive evidence of ecze¹ma wholly dependent upon cerebral or spinal disease, is small, both actually and relatively, when compared to other nervous connections, and that this is a field in which we require further observation.

Having now reviewed, as far as possible, the anatomical, pathological, and clinical evidence accessible relating to the connection between ecze¹ma and disturbances or disease of the nervous system, let us briefly examine as to how far it goes to prove a real nerve pathology of ecze¹ma.

Before we can rightly understand the part played by the nervous system in the production of ecze¹ma,

we must first clearly recognize and define what skin condition it is that we shall call ecze¹ma, for whose etiology we are searching.

First, then, we must insist upon the entire separation of *dermatitis*, pure and simple, from *eczema*.

We all know that the skin may become inflamed in various degrees from a great variety of local causes, from the mildest effect of heat or cold or mechanical action, or from various chemical and vegetable irritants, up to the most severe and destructive inflammation of its entire structure. To these different forms and degrees of skin inflammation from purely local causes, various names have been given, partly to describe the condition present and partly to express the cause. In this group belong the animal and vegetable parasitic diseases, which are to be entirely separated from the disease process long called ecze¹ma, and recognized by its clinical appearances, as will be mentioned later. All these conditions, depending wholly on local agencies, tend to pass away when the irritating cause is removed or has ceased to act: for the skin, equally with other structures of the body, has a strong tendency to return to a state of health, unless prevented by internal or external causes.

A single word must be said here in regard to an eruption or condition of the skin, to which much attention has been called of late, namely, the *seborrhœic ecze¹ma* of my esteemed friend Dr. Unna. I say "a single word," for any attempt to discuss the subject fully would carry me far beyond the proper limits of this paper. I can only say that I take issue entirely with Dr. Unna in regard to the matter referred to, and I say this after much thought, and after having seen many cases to which this diagnosis had been given by those who know well what is intended by *seborrhœic ecze¹ma*; I have followed the matter carefully almost from the very first appearance of Dr. Unna's publications. The most typical cases, which are mainly seen on the chest and back, I still regard as *seborrhœa*, while many of the less marked cases are readily recognized as other ordinary forms of ecze¹ma. Whether there is a parasite in *seborrhœa* I will not attempt to affirm or deny, but I cannot agree to burden ecze¹ma with this cutaneous condition, the clinical appearance, course, and treatment of which, according to my experience, differ so entirely from those which belong to ecze¹ma proper.

I claim, therefore, that if this condition, called *seborrhœic ecze¹ma*, is a local affair, due entirely to a parasite, and cured by anti-parasitic treatment, it is, like the other conditions alluded to, a *dermatitis*, and not ecze¹ma in the truest sense of the term; we but confuse our subject and increase the difficulties of study and treatment, if we retain as ecze¹ma an eruption of a distinct local nature.

¹ Meyer, loc. cit., p. 30.

² Nicol: Journ. Cutan. Med., London, iv. p. 197.

³ Charcot, cited by Schwimmer, loc. cit., p. 122.

⁴ Rendu: Annales de Dermat. et de Syph., 1874-5, vol. vi. p. 205.

⁵ Vulpian: Leçons sur. les Mal. de la Moelle, 1877, p. 338.

⁶ Purdon: Journ. Cutan. Med., London, iv. p. 229.

⁷ Mitchell, Moorhouse, and Keen.

⁸ Couyba: Des "Troubles trophiques consécutives, etc." Thèse de Paris, 1871.

Excluding, then, all doubtful conditions, and taking eczema as we all know it, we must recognize the three main forms into which it has long been divided clinically:

1. Acute, newly-developing, or recurrent eruptions in erythematous, papular, and vesicular forms, with burning, itching, etc.

2. Chronic patches of diseased skin, with thickening and itching, tending to remain long quiescent, unless irritated or removed by treatment.

3. Between these two we have the subacute form, more or less extensive, where, with chronic patches, there are also exacerbations, to a greater or less degree acute in character.

Taking, now, eczema, as here recognized, we may study it according to the three elements of causation, as mentioned in the topic proposed for discussion:

1. Can nerve-disturbance cause eczema *de novo*, or does it only produce or excite an eruption in a previously susceptible subject? and in what manner does it act?

2. How far does a diathesis predispose to or cause eczema?

3. What part, if any, is played by parasites?

In the light of the many observations which have been made on all sides, some of which have been here quoted, there can be no question whatever that an eruption of eczema may be induced, in a person who has never before experienced the same, by certain conditions or disturbances of the nervous system; in other words, we answer that nerve-influence can produce the disease *de novo*; and it is clear also that in those who are susceptible thereto the eruption may be prolonged or fresh outbreaks caused by neurotic agencies.

In regard to the manner of operation, exactly how the nerve-disturbance produces its effect upon the skin, we are not as yet in a position to speak definitely; much more light, both clinical and pathological, is required before the matter can be considered to be definitely determined.

Looking back over the clinical part of this essay we find that there is so little evidence connecting eczema with disease of the brain or spinal cord that we may practically exclude them from our consideration. Our study, therefore, narrows itself down to the terminal and conducting nerves and their ganglia, and to the sympathetic nervous system; for the influence of the nervous system certainly must be invoked to explain the phenomena briefly quoted from many observers.

Considering the branches into which we divided our subject in a reverse order, we have seen that eczema has been observed:

1. In connection with or following mechanical injuries to conducting nerves.

2. In connection with or alternating with functional disorder of conducting nerves.

3. In connection with or following peripheral reflex irritation.

4. In connection with or following internal reflex irritation.

5. In connection with or following nervous or mental shock.

6. In connection with or following upon, once or repeatedly, neurasthenia or nerve-exhaustion.

Time and space fail us to investigate or even allude to and explain the various theories which have been advanced in regard to the *modus operandi* of the nerve-influence, and these have been so well elaborated by Leloir¹ in his excellent monograph already referred to, that it would seem useless to go over the ground again. It would appear best, therefore, with him to adopt the theory proposed by Vulpian as the most plausible one, namely, that of a *diminution, more or less complete, of the trophic influence exercised by the nervous system upon the tissues*. This diminution of the trophic influence may take place, either directly (by destruction of nervous fibres or trophic centres) or in a reflex manner (by a diminution of the action of the trophic centres under the influence of centripetal excitation of these centres).

There is no question that in eczema we have also a great implication of the vasomotor system, as is constantly seen in the congestive element of the eruption; the same is also shown by the great value of ergot in certain cases, to which Lewin and Witzel² have called particular attention, and of which I could furnish abundant personal evidence. But, as far as has been observed, mere dilatation or contraction of the bloodvessels does not result in the more permanent changes of the skin which are found in eczema; the angio-neurotic eruptions, such as roseola, erythema, and urticaria, do not tend to pass into the chronic and infiltrated condition of the skin which is seen in eczema. While, therefore, the nerves controlling the blood-supply are also affected in eczema, the real cause of the structural changes found in the skin must be charged to the nerves presiding over nutrition and repair, and with Schwimmer³ we must place eczema as a tropho-neurosis.

What this trophic nerve-element is we cannot now say, but it is not at all necessary to believe with Samuel⁴ in the existence of any special set of trophic nerves, as they have never yet been demonstrated; but clinically we know that such an action must

¹ Leloir: *Recherches clin. etc., sur les Aff. cutan. d'Origine Nerveuse*, Paris, 1882, p. 179.

² Witzel: *Ueber den nervösen Character des Eczems*, etc. Berlin, 1879.

³ Schwimmer: *Loc. cit.*, p. 121.

⁴ Samuel: *Die trophischen Nerven*. Leipzig, 1868.

exist, even if we cannot demonstrate exactly the nerves which preside over nutrition.

The sympathetic nervous system has undoubtedly much to do with a genesis of eczema, but what share has not yet been demonstrated. The study of the influence of the sympathetic on disease is most difficult, and relatively little has been accomplished in the direction of showing actual skin lesions due to primary disease or derangement of these nerves or their ganglia. The only pathological evidence in regard to eczema is the case reported by Marcacci,¹ which has been so often quoted that it is remarkable that other observations have not been made in this line. In Marcacci's case the man, aged seventy years, having an acute, generalized eczema, died of right pneumonia. At the autopsy "the upper cervical ganglia of the sympathetic, as also of the cœliac, were visibly hyperæmic to the naked eye, and on microscopic section the changes were even much more evident." Moreover, when immersed in distilled water, acetic acid, and glycerin, the specimens showed the presence of a large number of nuclei; the nerve-cells, diminished by the lateral pressure of the nuclear mass, were turbid in their protoplasm, and marked pigmentation was found in the intercellular spaces.

This single observation is certainly far from being satisfactory proof that the sympathetic nervous system is involved in eczema, although supported by clinical evidence, and by the therapeutical proof found in the benefit obtained in many cases of obstinate eczema from galvanization of the sympathetic, or central galvanization, as already mentioned. For, still, it is by no means certain whether the hyperæmic and other changes found in the sympathetic ganglia in this case were not connected with the pneumonia quite as much as with the eczema. Further researches in this direction are urgently needed.

It would be interesting, did time permit, to study now somewhat in regard to the actual manner in which various nerve conditions operate to cause eczema, in certain cases. The question arises, How far the trophic and angio-neurotic phenomena are due to an exaggerated activity in certain nerves or ganglia, spoken of as the *lower centres*, or how far they are due to a want of control over the processes of life and health, as exercised by the *higher nervous level* or *centre*? We all know, from experience, that local or other agencies which at one time will cause the appearance of eczema in a patient, will at another time not be followed by such a result, and we very often recognize that it is because at that particular time the person is suffering from a depressed condition of health; or, in other words, that there is a lowered state of general vitality. With

this there is a lowered nervous state, the patient is less under self-control, and, if a young female, may give way to hysterical manifestations. Now, in just the same manner the higher nervous centres, which undoubtedly control, to a greater or less extent, the lower centres which have to do with animal life, nutrition, assimilation, and metabolic processes, when they become weakened by prolonged strain or nervous or mental shock, they lose control of the organic processes, and errors occur which we call disease in various organs.

Thus we can explain how a local agency which in one patient, or at one time, will produce only a local dermatitis, may, in another patient or at another time, excite an inflammatory condition of the skin which will be continued in the form of eczema. Want of time and space forbids our pursuing this interesting study further, and we must here rest our case.

Having seen, now, that the nervous system plays a most important part in the rôle of the production of eczema, we can better understand how other elements, such as various digestive and other derangements, can act as real basic causes of the disease. But the consideration of this aspect of the question would lead us far beyond the limits proper for the present occasion, and I must leave these, with the question of diathesis and parasitic influence, to others who will follow in the discussion.

4 EAST THIRTY-SEVENTH STREET, NEW YORK CITY.

CLINICAL MEMORANDA.

SURGICAL.

A Case of Traumatic Tetanus.—The patient was a muscular negro, aged thirty-two years, who stepped upon a nail, which entered the plantar surface of the foot near the metatarso-phalangeal articulation of the little toe. The wound suppurated and was very painful, but finally healed, leaving a tender scar. Fifteen days after the injury, sharp pain was felt in the cicatrix extending to the thigh along the course of the great sciatic nerve, and finally to the spinal cord. The patient complained of severe pain in the back of his neck and head, and also of a sensation of oppression in the thorax. About twenty-four hours after the pain was first felt in the scar, the muscles of his jaws became rigid, sore, and painful, and his mouth could be opened with difficulty only. In three more days the mouth could not be opened, and all the muscles of the body and extremities became rigid. Opisthotonus was very marked.

When I first saw the patient, on the fourth day of the tetanic spasms I ordered calomel 10 grains, tartar emetic $\frac{1}{2}$ grain, and croton oil 3 drops; followed by chloral and bromide of potassium of each 25 grains every two hours. The latter drugs were given throughout the course of the disease. On every third day I gave 3 drops of croton oil, which produced three or four watery stools in twenty-four hours. I made a crucial

¹ Marcacci: Gior. Ital. della Mal. ven. e della Pelle, 1878, p. 171.

incision in the scar, producing a venous hæmorrhage, then dressed the wound with oil of turpentine. When the heart showed signs of weakness I gave 25 drops of tincture of digitalis and 1 ounce of whiskey four times daily. When the temperature rose above 103° F., I gave 12 grains of quinine, not only for its antipyretic effect but for the antizymotic action. The patient's diet was exclusively liquid. On the twelfth day he could open his mouth. He had only two general convulsions after the bromide and chloral were first given, and on the twentieth day he was out of bed.

As this is the second case of traumatic tetanus I have successfully treated in this manner, the method seems worth noticing.

W. R. JACKSON, M.D.,
Visiting Physician to the City Hospital,
Mobile, Alabama.

THERAPEUTICAL.

Hints on the Treatment of Chronic Bronchial Catarrh or "Winter Cough."—I wish to call attention to the use of some old, but neglected, remedies which I have used during the past four years with great satisfaction in the treatment of chronic bronchitis.

Antimonium sulphuratum or "golden sulphuret of antimony," United States Dispensatory, p. 208, fifteenth edition, gives the best results in cases in which the expectoration has assumed a yellow or greenish-yellow color and is profuse, almost suffocative in quantity. It should be given triturated with milk sugar in doses of from $\frac{3}{16}$ to $\frac{1}{8}$ of a grain after meals and at bedtime; it may be administered with other remedies to quiet cough and allay fever, and as most cases of chronic bronchitis with profuse secretion have slight fever, I usually prescribe tincture of aconite $\frac{1}{2}$ minim, tincture of bryonia $\frac{1}{16}$ minim, and tincture of belladonna $\frac{1}{16}$ minim, and if cough is troublesome, either codeine or chlorodyne is given on sugar at bedtime.

After the expectoration becomes thick, bluish-white and tenacious—like boiled starch—and causes gagging, bichromate of potassium in doses of from $\frac{3}{16}$ to $\frac{1}{8}$ grain may take the place of the antimony salt, or may be given with it.

This method of treatment will give excellent results in many cases of phthisis.

BRIDGETON, N. J.

THEODORE G. DAVIS, M.D.

MEDICAL PROGRESS.

A Fish-bone Impacted in the Rectum.—DR. HENRY LEE (*Lancet*, January 17, 1891) reports the case of a man who had been treated for about two and a half years for dysentery. On examining the rectum, Dr. Lee discovered a fish-bone about two and one-half inches long impacted across the bowel about two inches from the anus. The bone was removed through a speculum by means of a pair of long forceps. The dysenteric symptoms, from which the patient was suffering, immediately ceased.

Nephrolithotomy after Nephrectomy.—MR. CLEMENT LUCAS (*Lancet*, January 17, 1891) reports a case of nephrolithotomy in a woman from whom three months previ-

ously the right kidney, containing a mass of stones, had been removed. The nephrolithotomy was performed on the fifth day of total suppression of urine, with violent pain radiating from the left lumbar region. Cutting down on the kidney, Mr. Lucas discovered a conical stone about three-fourths of an inch long, acting as a ball-valve to the opening of the ureter. For the first twelve days after the operation the urine passed through the wound only, but after the nineteenth day it passed entirely by the natural channel. Healing was complete ten weeks after the operation. The operation was performed in 1885, and the patient has remained in excellent health.

Sodium Chloride in Anæmia.—DR. E. FRANK (*Prager medicinische Wochenschrift*) reports two cases of acute anæmia due to hæmorrhage, in which death seemed unavoidable, but which improved rapidly under subcutaneous injections of a sterilized sodium chloride solution (six-tenths of one per cent). In one case 500 grammes, in the other case 400 grammes, were injected inside of one hour.

Traumatic Ciliary Neuralgia.—EVERBASH reports an interesting case of traumatic ciliary neuralgia, caused by the point of a needle penetrating the eyeball at the sclero-corneal junction. The injury healed promptly, and left no objective sign to account for the subjective symptoms. He found the pupil slightly dilated and irregular, there being a projection opposite the wound, which disappeared under atropine. This indicated in all probability a circumscribed detachment of the iris from its ciliary insertion. The neuralgia may have resulted from primary injury of a nerve-filament or from pressure on the latter through distortion by scar-formation. By the galvano-cautery the focus of irritation was removed, after which the subjective symptoms disappeared promptly.—*Münchener medicinische Wochenschrift*, No. 51, 1890.

A Mixture for Irritability of the Bladder.—In the *Gazette de Gynécologie* the following prescription for irritability of the bladder is given:

R.—Benzoic acid 15 grains.
Borax 1½ drachms.
Water 5 ounces.—M.

Dose, one tablespoonful three times a day. The mixture produces a decrease in the frequency of urination and lessens the irritability of the walls of the bladder, which are in an abnormal state owing to the phosphates in the urine.

The Treatment of Metrorrhagia.—The *Gazette de Gynécologie* quotes the following prescription:

R.—Ergotin 2½ drachms.
Glycerin 5 "
Salicylic acid 30 grains.
Distilled water 2½ ounces.

A tablespoonful of this mixture is to be added to 3 tablespoonfuls of water and injected into the rectum once a day after the bowel has been emptied. At the same time it is well to give the following pill:

R.—Hydrochlorate of hydrastinine, 1 grain.

Powdered liquorice, a sufficient quantity.

Make into 10 pills, one of which should be given each day. If the flow is profuse, two pills may be given.

Local Applications of Boric Acid to Relieve Constipation.—

According to the *London Medical Recorder*, DR. PLATAN, of Berlin, suggests the insufflation into the rectum of a pinch of boric acid, to relieve constipation. The results are said to be excellent even in severe cases in which mechanical measures have failed.

Treatment of Chilblains.—BROcq and BESNIER use the following treatment for chilblains: When the chilblains have advanced to the point of suppuration, they first wash the affected parts perfectly clean, and then use the following application:

R.—Alum	} 1 drachm.
Borax		
Rose-water		8 ounces.

The feet are bathed with this or a solution of nitrate of silver, 1 part to 150, is painted over the affected parts. Finally, if the diseased condition is slow in healing and needs stimulation, they employ camphorated spirit 2½ ounces, tincture of cantharides from ½ to 1 drachm. Where the ulceration is very severe and sufficient to produce a slough, the parts should be thoroughly washed daily with a solution of bichloride of mercury, 1 to 2000, or with solutions of chloride of sodium.

The Sedative Effects of Atropine and Duboisine.—After a large number of observations upon the effects of atropine and duboisine, DR. N. OSTERMAYER (*Internationale klinische Rundschau*, November 9, 1890) reaches the following conclusions:

1. In cases of mental disorder atropine in doses of from ⅛ to ⅓ grain is undoubtedly sedative, and indirectly is also hypnotic, but cannot be recommended for general use.
2. After the continued employment of the drug the good effects are no longer produced.
3. Bad effects do not follow the use of the drug except, in some cases, slight vomiting and diarrhoea.
4. Atropine is often effective in cases which are not influenced by morphine or hyoscyne.

Concerning the sulphate of duboisine, Dr. Ostermayer concludes:

1. That in irritative mental disease the effects of the drug are sure and develop rapidly, and somewhat resemble those of hyoscyne, the effects appearing in from ten to fifteen minutes after the drug has been given hypodermically.
2. It has distinct hypnotic effects, sleep usually following in from twenty to thirty minutes after the administration. In conditions of great excitement the author employed doses of from ⅛ to ⅓ grain, and in no case were bad effects observed.
3. After the long-continued use of the drug the effects are much less marked.

The Chloral Antipyretics.—According to GERMAIN SÉE, the monochloral and bichloral antipyrine are similar in their action to chloral, differing, however, from the latter

in being less depressing to the heart and circulation. The dose of each varies from 2 to 3 grammes. They should not be used in cardiac disease with failing compensation, since they augment the blood-stasis, and therefore increase the albuminuria. They may be administered, however, with impunity as hypnotics in aortic disease in the period of compensation. They have no action upon dyspnoea, either cardiac or pulmonary. In some cases they slightly increase the secretion of urine. Compared to sulphonal and the hypnotics of the chloral series (chloralimid and chloralamid), they are much inferior on account of their depressing effect upon the vessels and heart, though this depressing action is less marked than is that of chloral.—*La Médecine Moderne*, December 18, 1890.

Retained Fœtus.—In the *Dublin Journal of Medical Science* for January, 1891, is given the history of a case reported by MACAN to the Royal Academy of Medicine in Ireland. The fœtus had been retained for three months after the termination of the normal period of pregnancy. Four years previously the woman had had a similar experience, and carried a fœtus for eleven months. Dr. Macan cross-examined her carefully as to the case now submitted, but got no history indicating that labor came on at the end of the ninth month and then ceased. She said she had no pains until the morning on which she was delivered, and had been in good health. About the present retention she consulted Dr. O'Brien, of Tipperary, who was acquainted with her previous history. In her former delivery her vagina was a good deal torn and became enlarged afterward. Dr. O'Brien recognized that the child had been dead for three months and that the vagina was closed, and therefore thought that ordinary delivery would be more dangerous than that by abdominal section, and believed that Porro's operation should be resorted to in order to remove the child and to prevent the accident from occurring again. When she came to Dr. Macan there was nothing but the history of the eleven months' pregnancy. He carefully examined her under ether. She had a profuse secretion of milk in the breasts; and he could feel through the vaginal walls a hard, irregular tumor, but nothing that resembled a collapsed head—for if the child had been then dead two months there should have been considerable softening of the head—so that at first he was under the impression that she had a fibroid tumor. He went to the country, and after his return he received a message by telephone that she was in hard labor with strong pains. During the extra three months she had had good health, but in the last week she had a feeling of great lassitude. On vaginal examination he found that the vault of her vagina was funnel-shaped, and he could not feel its attachments to the uterus. He put her under ether, and inserted a catheter, which brought away some decomposing blood. He then tried to break through the thin partition of the vagina with his finger and felt the hard bone of the child's head. He dilated the vagina with Barnes's bags. The extraction of the child was a very difficult process and occupied four and a half hours. Since the operation she has done very well, although she has had a rise of temperature to 101°, and washing out the uterus was attended with a fetid smell not of the ordinary kind. There must have been some abnormality

of the muscles of the uterus, or else she would not have had these delayed labors. The placenta was an extremely interesting structure and was flattened from the tremendous compression it had undergone. There have undoubtedly been cases in which the child was retained for an indefinite time, even though the cavity of the uterus had a normal opening, but Dr. Macan said that he had never met with a case like the present.

Antiseptic Precautions in the Management of Newborn Children.—EPSTEIN (*Jahrbücher f. Kinderheilkunde*) writes that our knowledge of infection and infectious diseases has made it possible to diminish greatly, by means of prophylactic measures, the mortality from septic diseases in newborn infants. At this period of life the diagnosis of septicæmia is not easy; fever and chills may be absent and all subjective symptoms are wanting. Intestinal catarrh and marked debility are common accompaniments of the disease. Cases in which septicæmia is acquired before or during birth are very rare. The most common avenue of entrance for septic matter is the navel, although others are possible, the danger of infection being, of course, greatest during the first few days of life, when the stump of the cord is an open wound.

Infection by way of the mouth may occur, as in cases of diphtheria, septic croup, and aphthæ. It may also be caused by the aspiration of abnormal amniotic fluid, and by contact with the diseased genitals of the mother. Prophylaxis must begin with the most careful treatment of the umbilical cord. The stump should be cleaned and surrounded with a carbolyzed gauze dressing, the object being to produce mummification as soon as possible, and moist dressings should be avoided. A free access of air to the stump will hasten the process of drying and healing.

The physician and nurse must first attend to the infant and then to the mother, the hands being scrupulously clean, especially while handling the cord. For the first baths of the infant a harmless antiseptic solution, such as one containing the permanganate of potassium, should be used. Repeated washing and scouring of the mouth must be avoided, as such manipulations are frequently the cause of thrush. A dirty finger must not be placed in the mouth of an infant to remove secretions, nor should a dirty instrument be used, if the child is born asphyxiated, to aid in resuscitation. The instillation of a drop of a two-per-cent. solution of nitrate of silver into each eye of newborn infants should be carried out in both private and hospital practice as a preventive of ophthalmia. With reference to artificial food, the use of sterilized milk is deemed of the utmost importance, but it must not be considered that this is a perfect substitute for mother's milk.—*Archives of Pediatrics*, January, 1891.

Treatment of Snake-bites.—In the *British Medical Journal*, January 3, 1891, DR. T. LAUDER BRUNTON briefly reviews the physiology of death from snake-bites, and makes some possibly useful suggestions in regard to treatment. As is well-known, death from the bites of rattlesnakes and cobras is by respiratory paralysis. Laboratory experiments have shown that animals poisoned by the cobra virus may be resuscitated by artificial respiration and kept alive for many hours, but that they

finally succumb. The same result occurred in one case in man, the patient dying in a few days from pneumonia. Mueller has recommended strychnine in large doses as an antidote to snake venom, and as it is a powerful respiratory stimulant we may very reasonably hope for benefit from its use, but one grain, as has been recommended, is dangerous. It should be given in small, frequently-repeated doses, its effects being carefully observed. But the depression of the respiration and the heart are not the only effects of the poison, and violent vomiting, hæmaturia, and bloody stools are sometimes very marked symptoms. Strychnine will not counteract these effects of the poison, and, in order to prevent their occurrence, we must endeavor to aid its elimination. In trying to determine what channels serve this purpose it seemed to Dr. Brunton that elimination takes place through the salivary glands and the mucous membrane of the stomach and intestines.

Fayrer and himself found that the cobra venom had an extraordinary irritant action on mucous membranes, and when it was introduced into the stomach of a frog it caused most violent vomiting, very unusual in that animal. This experiment suggests that the vomiting which forms such a prominent symptom in many cases may be due to the poison being excreted by the mucous membrane of the stomach in much the same way as tartar emetic or apomorphine would be. If this hypothesis is correct we can readily understand why partial recovery may occur if the case is treated with artificial respiration, and yet death ultimately occur. For if the poison were eliminated into the stomach and intestines by the mucous membrane, recovery would follow; but if the venom, instead of being removed from the stomach as quickly as it was excreted, were to remain there and undergo absorption, the symptoms would return and death would ensue. It therefore seems that one should try, if possible, to remove any poison that might be eliminated, and this might be done by washing out the stomach with alcohol in some form, for example, whiskey or brandy. The want of means has prevented Dr. Brunton from trying this method, but the hypothesis seems to explain the good results obtained by the free use of whiskey or brandy internally. It is not the action of these substances on the nerve-centres that prevents death from the venom, for men bitten while drunk have died from the bite, although it is usually stated that if a man can be made drunk after he has been bitten his life will be saved. This would seem to indicate that the whiskey or brandy acts locally in the stomach, coagulating any venom which may have been excreted and preventing re-absorption. The plan that should be tested is to keep up artificial respiration, and wash out the stomach with whiskey or brandy. It is obvious that this plan might be combined with the subcutaneous injection of strychnine, and that, while the circulation and respiration are maintained by strychnine, alcohol might be freely given, and after it had been removed by vomiting or the stomach-tube, it could be repeated. This plan is not without danger, and it should first be tried in a laboratory, for large quantities of brandy or whiskey might, by their strongly irritant action in the stomach, lead to reflex depression of the circulation and fatal shock, to say nothing of gastritis in case of recovery.

CURRENT LITERATURE.

SATURDAY, FEBRUARY 7, 1891.

PARTIAL RESECTION OF THE LIVER.

HOCHENEGG adds another case of partial resection of the liver to his former publication (*Wiener klinische Wochenschrift*, No. 12, 1890). An unusually large gumma was removed by Professor Albert, by Hochenegg's method, from the margin of the right lobe; the diagnosis of gumma being made after the operation.

After burning away with the Paquelin cautery an oval ring of liver tissue over the seat of the tumor, the latter was torn from its bed by hooks and forceps, and was found to be encapsulated. The bleeding was stopped by an iodoform-gauze tampon, the parenchyma partially closed over the latter, and the portion of the liver thus treated was fixed outside of the abdominal walls by passing a fibroma-needle through the tampon and the liver-tissue on either side. The wound below was closely stitched to the liver-tissue. Hæmorrhage occurred on the second day, but was completely checked by an additional tampon.

On removing the needle on the twelfth day the liver was found fixed to the abdominal walls, and the cavity rapidly filling with healthy granulations. Though convalescence was retarded by phlebitis, with thrombus-formation in one thigh, the patient was discharged cured on the forty-fifth day.

The author claims that this method is superior to that of Tillmann, which consists of two distinct operations, namely, fixing the liver to the abdominal parietes, and, after attachment has formed, removing the diseased part. He admits that the latter method is less dangerous, but thinks that the removal of diseased tissue is not as complete as by his own operation.—*Wiener klinische Wochenschrift*, December 25, 1890.

AUTO-TOXÆMIA.

PROFESSOR V. JAKSCH, in an introductory lecture upon the clinical significance of toxæmia, distinguishes two groups of toxæmia, namely, exogenous and endogenous. Of the latter he recognizes three main varieties, as follows:

1. The toxic agents are normal products of tissue-interchange, abnormally retained in the body (uræmia, toxæmia from acute intestinal obstruction, etc.).

2. They may be the outcome of pathological processes, which change the normal course of assimilation of food and tissue-interchange, so that instead of non-toxic, toxic matter is formed. This group he names nosotoxicoes, which he subdivides into two principal divisions:

(a) The carbohydrates, fats, or albuminous matter, which may be decomposed abnormally and give rise to toxic products, e. g., diabetic intoxication, coma carcinomatosum.

(b) A contagium vivum enters the body through the skin, or the respiratory or digestive tract, and

develops toxic agents in the tissue on which it feeds, as in infectious diseases.

3. The toxic substance results from pathological non-toxic products, which again produce the toxic agent only under certain conditions.

This group he calls auto-toxicoses, and includes in it poisonous substances (diamine, toxalbumin) resulting from decomposition of the urine in the bladder, under certain pathological conditions, and giving rise to the condition called ammoniæmia.—*Wiener klinische Wochenschrift*, December 25, 1890.

NEPHRECTOMY FOR HÆMOPHILIA RENALIS.

PROFESSOR SENATOR reports an interesting case of hæmophilia renalis in a girl aged nineteen years. The diagnosis was made positive by the family history and the exclusion of organic cause of the hæmaturia. A hereditary tendency existed in the family of her father, who made matters worse by marrying a relative.

The seat of the bleeding was located in the right kidney by Dr. Nitze by means of an endoscope, through which he saw the blood escaping from the right ureter.

Since all medicinal measures to check the hæmorrhage failed and death by asthenia seemed unavoidable, nephrectomy was performed. The hæmaturia promptly ceased, the wound rapidly cicatrized, and four weeks after the operation the patient was discharged cured.

The excised kidney was normal, both macroscopically and microscopically.

In addition to this report, Senator reviews the two other cases of nephrectomy for obstinate hæmaturia, which have been reported, and believes that in these cases also hæmophilia was the disease, though that diagnosis was not made. In both cases life was saved apparently by the operation.

From these cases and the fact that the tendency to bleed is often confined to certain regions or organs (mostly to the nose), Senator concludes that, besides a general constitutional disease, there exists another form in which the faulty nutrition and condition of the vessels are strictly localized. This condition may be inherited as such or may appear with the development of the body.

This view opens an important therapeutic field, namely, that of removing the focus of danger, if necessary, by surgical means.—*Berlin. klin. Wochenschrift*, January 1, 1891.

THE USE OF SODIUM CHLORIDE SOLUTIONS DURING THORACENTESIS.

AFTER experiments on animals and later by trials on men, DR. S. LEWASCHEW reached the following conclusions:

A sterilized sodium chloride solution, introduced by gravity into the thoracic cavity to take the place of the exudate during thoracentesis, prevents marked fluctuations in intrathoracic pressure and permits a nearly complete removal of the effusion. It not only does no harm to the inflamed pleura,

if the proper precautions are taken, but seems to influence favorably the inflammatory process. Moreover, the operation is perfectly painless.

In Lewaschew's cases, after the procedure the inflammation gradually subsided and the greatly diluted exudate was completely absorbed.

In non-suppurative pleuritis without exception, and in recent cases of the suppurative form, no new effusion formed, one operation being sufficient.

If the operation was performed after the subsidence of the acute symptoms, recovery rapidly proceeded; if performed during the acute inflammatory stage and while the effusion was increasing, recovery was slower.

In all cases a decided rise of temperature with increased diuresis and pulmonary capacity, and decided decrease in the pectoral dullness, shortly followed the operation. These symptoms were probably the effects of absorption of the highly-diluted effusion.—*Deutsche med. Wochenschrift*, December 25, 1890.

EXTERNAL ŒSOPHAGOTOMY FOR CANCER.

CHRISTOVITCH lays down the following indications for œsophagotomy in cases of cancer of the œsophagus:

1. The tumor being situated at the upper orifice of the œsophagus.

2. If the tumor is hard, the operation should be performed to avoid the consequences of a rent or a grave hæmorrhage in attempting to dilate the constriction.

He claims the following advantages of external œsophagotomy over gastrotomy:

1. As an operation it is easier to perform and less dangerous than is gastrotomy. To avoid every complication after the operation, it is necessary to make a free incision and to place an elastic bougie in the passage in order to permit the easy flow of liquids from the mouth and pharynx and from the wound.

2. The constriction is accessible to direct exploration and to attempts at dilatation, and if the tumor is found to be benign, or if a cicatricial constriction is found, the operation will produce a cure.

3. If the patient is not greatly exhausted, and if there is no great urgency, an external œsophagotomy will aid the operator in performing gastrotomy more readily and surely.

4. In every case of non-cancerous constriction of the upper portion of the œsophagus, œsophagotomy is preferable should there be indication for operative interference.

5. External œsophagotomy permits of further procedures, even resection of the cancerous portion of the œsophagus and suturing of the cut edge of the œsophagus to the edges of the cutaneous wound.—*Bulletin Générale de Thérapeutique*, December 30, 1890.

SYMPATHETIC OPHTHALMIA.

FROM a study of the recent literature of sympathetic ophthalmia, together with some personal observa-

tions upon the disease, E. MEYER arrives at the following conclusions:

1. Sympathetic ophthalmia of one eye appears only after traumatism of its fellow, either with or without penetration. The infectious nature of the traumatism appears to play an important rôle in the process.

2. The experiments of Deutschmann and the observations on experimental sympathetic ophthalmia of Gayet are not proof that the disease in man is transmitted by way of the optic nerves, although they demonstrate the anatomical possibility of that transmission.

3. The results of the autopsy on the case published by Becker (*Archiv f. Psychiatrie*, xii. 1) furnish anatomical proof of a sympathetic ophthalmia in man without alteration of the optic nerves. The possibility of the transmission in man by the ciliary nerves, or by other avenues, must be considered.

4. Enucleation of the eye primarily injured, the visual function of which cannot be preserved, is the most certain way of preventing sympathetic ophthalmia. Nevertheless, enucleation, practised even within the twenty-four hours following the injury, will not always prevent the development of inflammation in the other eye.

5. Opto-ciliary neurotomy is indisputably useful in eyes the vision of which is lost by irido-choroiditis—inflammatory, not traumatic—or by absolute glaucoma. It is inefficient in preventing sympathetic ophthalmia.

6. Resection of the optic nerve cannot as yet be regarded as sufficient to prevent sympathetic ophthalmia. In one case of resection, sympathetic ophthalmia developed fifteen days after the operation.—*Revue Générale d'Ophthalmologie*, November 30, 1890.

CORRESPONDENCE.

CHICAGO.

Drs. Gibbs and Shurly on the Etiology and Treatment of Phthisis.

By invitation of the faculty of the Post-graduate Medical School, Drs. Heneage Gibbs, of Ann Arbor, and E. L. Shurly, of Detroit, Michigan, lectured in Chicago, on the evening of January 23d, on the "Etiology and Treatment of Phthisis." The audience was large, and many of the most distinguished practitioners of the city were present. Dr. N. S. Davis presided.

Dr. Gibbs began by saying that for a number of years he had been working on the question of the unity or duality of phthisis, and that he has not yet been able to satisfy himself as to the question; for if sections of the lungs of cases in which there is consolidation are carefully examined under the microscope, we find that they may be divided into two varieties. One form is inflammatory, while the other is a new growth—tubercle. Then, as a subclass, he mentioned acute miliary tuberculosis, which he considered a separate affection, inasmuch as the symptoms are different, and the disease does not run a long course, terminating usually in two or three weeks. In this form there is no breaking-down

of the lung-tissue, or ulceration into the respiratory passages, and we never find tubercle-bacilli in the sputum. In tuberculosis we have a different state of things. By the term *tuberculosis* he meant a new growth composed of fibroid tissue in the lungs. He called it *fibroid* tissue, because it was not clear to him that it is *fibrous* tissue, the reaction not being exactly the same as that of the fibrous tissue formed by chronic inflammation. It is formed from the connective tissue of the lungs, therefore it is of a fibroid character. If we knew whether caseation in the inflammatory form of phthisis is the same as that due to the breaking-down of tubercle, it would give us a better idea of the disease than we have at present.

With regard to tubercles, it has been said that there are varieties. Now, in fifty, or even five hundred sections from a case of acute miliary tuberculosis, we will never find two tubercles identical in form. There is a sharp distinction between them. We have, on the one hand, a purely inflammatory change in which there is no attempt at any structural formation whatever; and on the other, a reticular formation. One form is inflammatory from the commencement, while the other is reticular or tubercular from the beginning, consequently we are justified in considering them as two distinct diseases. Dr. Gibbes has never been able to find tubercle in the earliest stages of involvement of the lung. In the tubercular form he has carefully examined hundreds of sections, and yet no tubercle bacilli could be found, either at the commencement or throughout the course of the disease. Furthermore, he has had cases of tuberculosis of a more chronic form, which had existed for a long time, in which (either at the commencement or during the course of the disease) absolutely no bacilli could be found in the sputum, and in which, on post-mortem examination, there were large cavities in the lungs, and sections showed the characteristic breaking-down of lung tissue.

He hoped that some one would be able in the future to show conclusively whether there is any relation between scrofula and tuberculosis.

Dr. Gibbes then dwelt upon consolidations produced in the lungs by other diseases than those he had mentioned. We have, besides the forms of tuberculosis, the lesions of syphilis, and hydatids, which are sometimes included among the consolidations of the lungs, and one other disease, namely, acute pneumonia. This condition does not clear up, but remains as a solid mass in the lungs. While it remains there it does not do much harm until some change takes place which produces an irritative action around the edge of the consolidated mass. If it is chronic, it does what a chronic inflammatory action always does, namely, it causes an increase of the fibrous tissue. After a time there is contraction, and the formation of bands of fibrous tissue caused by the inflammatory action of acute pneumonia which has not cleared up. This condition is called *fibroid phthisis*.

Dr. Gibbes closed by saying that Dr. Shurly and himself had pursued their investigations with a view to rendering inert some morbid product in the lung. They succeeded in doing this with iodoform. In their experiments they have paid little or no attention to the bacillus. They also sought for some chemical or chemicals

which would combine with the morbid product in the lung, and found that the chloride of gold and sodium was efficacious. In the early part of their experimental work the remedies were given by insufflation, but later, by hypodermic injections, as they found that by this method the drugs were carried to the morbid product with greater effect.

Dr. Shurly followed, dwelling upon the subject from a clinical standpoint. He said that if the bacillus is the cause of the complex conditions known as tuberculosis, which we find in the lungs and elsewhere, we must recognize one or more theories to account for it. We have in phthisis pulmonalis three distinct clinical types. It is exceedingly difficult to distinguish acute phthisis from acute miliary tuberculosis; the course is rapid in each, and the temperature-range and symptomatology are about the same. We have another form, however, which may be properly denominated the subacute form, in which the patient has a distinct catarrhal inflammation, existing perhaps for a certain length of time in the lining membrane of the bronchial tubes with little or no constitutional disturbance, the symptoms being simply local. After a time constitutional disturbances come on, and we find that this inflammation extends to the smaller tubes, finally involving the cells. The results of this are general wasting, more pronounced constitutional disturbances, and breaking down of the tissue which involves both the bronchial tissues and that of the alveoli of the lung, followed by caseation. A peculiar suppuration takes place, and post-mortem examination will reveal cavities with indurated walls and with evidences of ordinary inflammation.

We also have a chronic form in which the constitutional disturbance is postponed for a still longer period. After a while, if the patient lives long enough, the same condition of breaking-down occurs, and we find the characteristic morbid anatomy of phthisis pulmonalis.

Dr. Shurly said it occurred to them in their experimental work that these several conditions could not possibly be identical. They found that the bacilli when inoculated in animals failed to produce general or constitutional disease; they, therefore, had to look for some other cause. They did not, and never had, denied the universality of the tubercle bacillus, but they thought it possible that it is only an agent or concomitant which brings about the condition known as phthisis. In this connection the speaker was reminded of the views advanced by Dr. N. S. Davis, in 1882, in a paper before the American Medical Association, in which he declared that "there must be some chemical or bio-chemical agent besides this bacterium (tubercle bacillus) to account for this condition of things." Many others have expressed the same doubt. It is argued by clinicians, especially in Europe, but also in America, that dried sputum, when breathed, produces the disease. The speaker could corroborate this, for by insufflation of dried sputum he had produced phthisis pulmonalis in monkeys; while if he inoculated the monkeys the disease would be general, that is, it would involve the spleen, liver, lungs, and other organs of the body. It has been stated by a number of bacteriologists and pathologists that if the sputum is dried in the sun, the virulence of the bacillus is destroyed, but in their experiments sun-dried sputum produced the disease. Does not that indi-

cate, said the speaker, that there is something accompanying the bacterium? They were thus led to think that the conditions of caseation, degeneration, and supuration may be produced by some bio-chemical action. They have always had this idea in view, consequently their first work was done in the belief that the *fons et origo* was in the lungs, and was a germ or poison generated there, and setting up inflammatory changes. They believe that phthisis pulmonalis of the subacute form is similar in its nature to what was formerly called scrofulosis.

They began to use different substances locally to check caseation. Sulphuretted hydrogen they found is a most virulent poison. Other chemicals were also used with unsatisfactory results. They then tried chlorine gas and chloride of gold and sodium, and found that patients could inhale the gas for a considerable length of time. The idea was to stop the formation of the virus whatever it might be, probably a ptomaine, leucomaine, or toxalbumin. Although inhalations of the chlorine gas would not stop the process, it would check it. There were some other constitutional disturbances continually going on, which they were determined to neutralize.

Owing to the various changes which chemicals are liable to undergo in the stomach and intestines before diffusion, it was evident that the remedies should be administered hypodermically. They found at first that iodine used in this manner produced abscesses *in loco*, but further investigation disclosed the fact that these abscesses were due to chemical impurities, and after obtaining their iodine from Dr. Clark, an eminent chemist of Detroit, they experienced no further trouble from abscesses except in animals to which large doses were given. The same is true of chloride of sodium. They found, after using iodine for a considerable length of time in monkeys, that it so influenced the digestive tract that it had to be abandoned. It caused vomiting, diarrhoea, etc.

The speaker anticipates publishing some case-histories in a short time. Thus far they have treated altogether four well-marked cases of so-called general tuberculosis, two of which died, while one case is certainly very much better. The report of the fourth case he would hold in abeyance. They have also treated a number of cases of phthisis pulmonalis, including both the tubercular and pneumonic forms. Of twenty-two cases they have had six so-called cures—so-called because sufficient time has not elapsed to determine definitely that they are cures.

In the case of a girl who had decided laryngeal phthisis, with ulceration, cicatrization is so nearly complete that the cicatrices could be detected by the laryngoscope. She returned to her home practically well last Christmas, where a physician continued the hypodermic injections once a week.

In a case in which the upper left lung was breaking down, as evinced by moist râles, the patient was examined by two other physicians. He has been under treatment since September. He now receives a hypodermic injection every ten days, and has practically passed from treatment.

Another case, a young girl, has gone home, and, according to the latest advice, is doing well, with the exception that she has a little cough. A diagnosis of phthisis in her case was made by other physicians before she was sent to Dr. Shurly for treatment.

A fourth case is that of a school-teacher, who has resumed teaching. She coughs a little, but there is no elevation of temperature.

A fifth case, a man, brought to him with a chronic form of the disease, has left the hospital very much better. He eats well, has no elevation of temperature, and no sweats.

They have at present thirty-five cases under treatment. The case of tuberculosis, previously mentioned, is one which several outside physicians saw in Harper Hospital. Dr. Shurly thought of giving up the treatment in this case, as it is undoubtedly one of general tuberculosis. But after having had one or two relapses the patient is improving, and when he left home she was sitting up. Although she has some elevation of temperature, yet she has no sweats. She expectorates about an ounce of mucus every twenty-four hours.

The general principle of treatment, continued the speaker, seems to hinge upon the use of chlorine gas to stop caseation as far as possible, and to cut off the origin of the poison which is circulating freely through the system. In the early stages such a thing is unnecessary. It is only necessary to use iodine in these stages.

In regard to the manipulation of chlorine gas, it needs care. The air of the room should be thoroughly laden with a chloride of sodium spray before the chlorine gas is evolved.

NEWS ITEMS.

Philadelphia Polyclinic.—A course of evening lectures upon medical subjects will be given by the staff of the Philadelphia Polyclinic upon Tuesday and Friday evenings at 8 P. M., to which the members of the medical profession are cordially invited. The lectures will be as follows:

February 3, Professor John B. Roberts, "Blood-poisoning."

February 6th, Professor H. Augustus Wilson, "The First Treatment of Congenital Club-foot."

February 10th, Professor John B. Roberts, "Blood-poisoning."

February 13th, Professor Thomas J. Mays, "The Therapeutics of Pain."

February 17th, Professor Thomas J. Mays, "The Therapeutics of Pain."

February 20th, Professor S. Solis-Cohen, "The Koch Treatment of Tuberculosis."

February 24th, Professor Samuel D. Risley, "The Cause of Myopia."

February 27th, Professor S. Solis-Cohen, "The Therapeutic Relations of the Nervous System."

March 3d, Professor Samuel D. Risley, "The Treatment of Myopia."

March 6th, Professor S. Solis-Cohen, "Neuro-medicaments."

March 10th, Professor Thomas G. Morton, "Club-foot."

March 13th, Professor John B. Deaver, "Endoscopy of the Urethra—Illustrated."

March 17th, Professor B. F. Baer, "Displacements of the Uterus."

March 20th, Professor J. Henry C. Simes, "Perverted Sexual Passion."

March 24th, Professor B. F. Baer, "Displacements of the Uterus."

March 27th, Professor B. Alexander Randall, "Aural Inflammation as a Cause of Brain Lesions."

March 31st, Professor Thomas S. K. Morton, "Asepsis and Antisepsis."

April 3d, Professor Charles K. Mills, "Brain Anatomy and Localization."

April 7th, Professor Alexander W. McCoy, "Intubation of the Larynx in Adults, and Diseases Demanding its Performance."

April 10th, Professor John B. Deaver, "Brain Surgery."

March 14th, Professor Arthur W. Watson, "Laryngeal Paralysis."

April 17th, Professor Charles K. Mills, "Methods of Studying Signs and Symptoms of Nervous Diseases."

April 21st, Professor Arthur Van Harlingen, "The Present Aspect of the Leprosy Question."

April 24th, Professor Charles K. Mills, "Mistakes in the Diagnosis of Nervous Diseases."

April 28th, Professor Edward P. Davis, "The Treatment of Delayed Labor."

May 1st, Adjunct W. M. L. Coplin, "Applied Pathology, its Value to the General Practitioner."

May 5th, Professor Edward P. Davis, "The Use of the Forceps."

May 8th, Adjunct W. M. L. Coplin, "Applied Pathology for the General Practitioner."

May 12th, Professor Edward P. Davis, "Labor in Contracted Pelvis."

May 15th, Professor Louis W. Steinbach, "Suppuration."

May 19th, Professor Edward P. Davis, "Obstetrical Antisepsis."

May 22d, Professor Edward Jackson, "Eye Symptoms of Cerebral and Spinal Disease."

May 26th, Professor Edward P. Davis, "The Artificial Feeding of Infants."

May 29th, Professor Edward Jackson, "Eye Symptoms of Cerebral and Spinal Disease."

Cases, specimens, and the lantern, as well as demonstrations of endoscopy and intubation, will be used in illustration, and a most interesting series of evenings is promised, surpassing the former courses as much as the former temporary quarters are excelled by the new Polyclinic building on Lombard above Eighteenth Street.

Deprived of Medical Services.—The following article from the *Pittsburg Dispatch* is of interest to medical men in general:

"John Mesendorf, of Etna, has entered suit against Dr. G. R. B. Robinson, President of the Physicians' Protective Association, of Sharpsburg and Etna, for \$10,000 damages. In the statement of his case Mr. Mesendorf alleges that he received a notice from Dr. Robinson as president of the association, stating that the physicians had organized themselves into an association to enable themselves to collect delinquent accounts. It stated that the plaintiff's account was overdue, and unless he paid it or satisfactory arrangements were made by July 1, 1890, his name would be placed on the list of delinquents, and medical attendance would be refused him. Mr. Mesendorf claims that he was

not indebted to the defendant, and paid no attention to the bill or notice he had received. The defendant then, he states, without cause and maliciously, placed his name on the list of delinquents mentioned in the notice.

"For the disrepute into which his name and character have been brought, without cause, and the deprivation of medical service, Mesendorf asks \$10,000 damages. Mr. Mesendorf is an old soldier and has a family. He denies that he ever contracted a bill."

The Medical and Surgical College of New Jersey.—The following preambles and resolutions relative to the Medical and Surgical College of New Jersey, were adopted by the District Medical Society for the County of Hudson on December 16, 1890:

Whereas: A certain medical institute, called the "Medical and Surgical College of the State of New Jersey," chartered by special Act of this State, approved March 17, 1870, was organized during the year 1888, and opened in three small rooms on the top floor of the general office building, No. 47 Montgomery Street, Jersey City, and

Whereas, Said alleged college has graduated several students whose diplomas have been presented to the Hudson County Board of Health, and who have been refused registration, and

Whereas, It has appeared to this Society, by good and sufficient evidence, that several members of the faculty, nearly all of whom are non-residents of this State, are either incompetent to deliver lectures on the topics assigned them, or are graduates of disreputable or fraudulent medical colleges; that the facilities for instruction in said alleged college are totally inadequate, and that no clinics, dissections or hospital practice have been or can be given; that the provisions of the charter of said college have not been observed by the authorities thereof; that the requirements of said charter, even if the same were strictly followed, are far below the standard of minimum requirements of medical colleges adopted and demanded by all medical authorities at the present time, and that, therefore, the possession of a diploma from said alleged college is no proof whatever that the holder thereof has received a good and sufficient medical education, and

Whereas, The State Board of Medical Examiners of New Jersey will introduce a bill at the next meeting of the Legislature for the purpose of repealing said charter:

Be it resolved, That the District Medical Society for the County of Hudson does hereby earnestly protest against the existence of said alleged college as an unnecessary, inadequate, and disreputable institution, tending to degrade and lower the standard of the medical profession; that the influence of this Society and of the individual members thereof be given to the support and passage of the bill to repeal said charter, and that a copy of this resolution be forwarded to the several medical societies of this State, with requests for their support and influence for the passage of said bill.

HENRY B. RUE, M.D.,
Secretary.

Rich and Poor.—There was once a rich woman who discovered that she was about to become a mother. She

did not wish to become a mother, for to do so would put her to some inconvenience, and for a short time interfere with her pleasure. So she sent for her physician, who was very noted and respectable. As a result of preventing her from becoming a mother, she died. The doctor certified that she died from peritonitis. Her remains were prepared for burial by a fashionable funeral director. Her sermon was preached by a fashionable clergyman. The fashionable doctor attended the funeral. Everybody mourned the death of the estimable Christian woman. Everybody was satisfied. "Because," said they, "whatever a rich woman, a noted doctor, a fashionable undertaker, and a swell clergyman do is all right."

There was once a poor cigarette girl, named Annie Goodwin, who discovered that she was about to become a mother. She did not wish to become a mother, for to do so would prevent her from ever making a living, except by a life of shame. So she sent for a doctor named McGonigal. As a result of preventing her from becoming a mother she died. The doctor certified that she died from peritonitis. Her remains were prepared for burial by an undertaker named Merritt. She had no funeral sermon, but was buried secretly. The police heard of it and arrested the doctor, the undertaker, the woman in whose house the cigarette girl died, a little boy, a girl friend of the dead woman, and the girl's lover. And everybody said it was horrible that so many persons should have conspired to murder the cigarette girl. They even wanted to lynch the doctor. "Because," said they, "unless such things are done by a rich woman, a noted doctor, a fashionable funeral director, and a swell clergyman, they are frightful crimes."—*Twentieth Century*.

The Medical Examiners' Bill.—Some misunderstanding seems to have arisen among certain members of the profession as to the identity of the two bills which have been presented to the Legislature of Pennsylvania. The one which goes by the name of the "Medical Examiners' Bill" is the one which was presented by Mr. Riter, of Philadelphia, and has received the unanimous endorsement of the State Medical Society of Pennsylvania and of the various County Medical Societies. The bill, which is entitled "A State Board of Medical Education," is one which has been presented by the homœopaths and eclectics, and possesses the disadvantage which we have already referred to in a previous issue, namely, a lack of fairness in representation.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JANUARY 20 TO FEBRUARY 2, 1891.

By direction of the Secretary of War, the extension of leave of absence, on account of sickness, granted STEVENS G. COWDREY, *Major and Surgeon*, in Special Orders No. 302, December 27, 1890, from this office, is still further extended two months, on surgeon's certificate of disability.—Par. 13, S. O. 19, A. G. O., Washington, D. C., January 23, 1891.

By direction of the Secretary of War, WILLIAM H. GARDNER, *Major and Surgeon*, is relieved from further duty in the field, and will return to his proper station.—Par. 2, S. O. 19, A. G. O., Washington, D. C., January 23, 1891.

By direction of the Secretary of War, FRANCIS J. IVES, *Captain and Assistant Surgeon*, is relieved from duty at Pine Ridge Agency, South Dakota, to take effect when his services can be spared by the commanding officer of the troops there stationed,

and will then return to New York City and resume his leave of absence.—Par. 9, S. O. 107, A. G. O., Washington, D. C., January 21, 1891.

By direction of the Secretary of War, EDWIN F. GARDNER, *Captain and Assistant Surgeon*, is relieved from duty at Pine Ridge Agency, South Dakota, and will proceed, without delay, to Fort Riley, Kansas, and report, for temporary duty, to the commanding officer of that post.—Par. 10, S. O. 107, A. G. O., Washington, D. C., January 21, 1891.

By direction of the Secretary of War, leave of absence for six months, with permission to go beyond the sea, is granted JULIUS H. PATZKI, *Major and Surgeon*.—Par. 5, S. O. 24, A. G. O., Washington, D. C., January 29, 1891.

By direction of the Secretary of War, WILLIAM STEPHENSON, *Captain and Assistant Surgeon*, will proceed, without delay, from Columbus Barracks, Ohio, to Fort Wayne, Michigan, and report in person to the commanding officer of that post for temporary duty, and upon completion thereof will return to his proper station.—Par. 13, S. O. 23, A. G. O., Washington, D. C., January 28, 1891.

By direction of the Secretary of War, ROBERT J. GIBSON, *Captain and Assistant Surgeon*, is relieved from further temporary duty in the field, to take effect so soon as his services can be spared by the officer commanding troops with which he is serving, and will then return to New Haven, Conn., and resume his leave of absence.—Par. 6, S. O. 22, A. G. O., Washington, D. C., January 27, 1891.

By direction of the Secretary of War, CHARLES M. GANDY, *Captain and Assistant Surgeon*, is relieved from temporary duty in the field, to take effect when his services can be spared by the commanding officer of the troops with which he is serving, and will then return to Ocean View, Cape May County, New Jersey, and resume his leave of absence.—Par. 1, S. O. 21, A. G. O., Washington, D. C., January 26, 1891.

By direction of the Secretary of War, WILLIAM O. OWENS, JR., *Captain and Assistant Surgeon*, is relieved from temporary duty with troops in the field, to take effect as soon as his services can be spared, and will then return to Muskogee, Indian Territory, and resume his leave of absence.—Par. 3, S. O. 20, A. G. O., Washington, D. C., January 24, 1891.

By direction of the Secretary of War, WALTER REED, *Captain and Assistant Surgeon*, is relieved from temporary duty at Fort Keogh, Montana, to take effect as soon as his services can be spared by the commanding officer of that post, and will then return to Baltimore, Maryland, and resume his duties in that city as Attending Surgeon and Examiner of Recruits.—Par. 3, S. O. 20, A. G. O., Washington, D. C., January 24, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR TWO WEEKS ENDING JANUARY 31, 1891.

PERSONS, REMUS C., *Surgeon*.—Ordered to the U. S. S. "Concord," February 10, 1891.

CRANDALL, R. P., *Assistant Surgeon*.—Ordered to examination preliminary to promotion.

BERRYHILL, T. A., *Passed Assistant Surgeon*.—Detached from the "McArthur," and wait orders to "Marion."

JONES, W. H., *Surgeon*.—Detached from "Swatara," to proceed home and is granted six weeks' leave of absence.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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